The Mining Journal

LONDON, AUGUST 8, 1958

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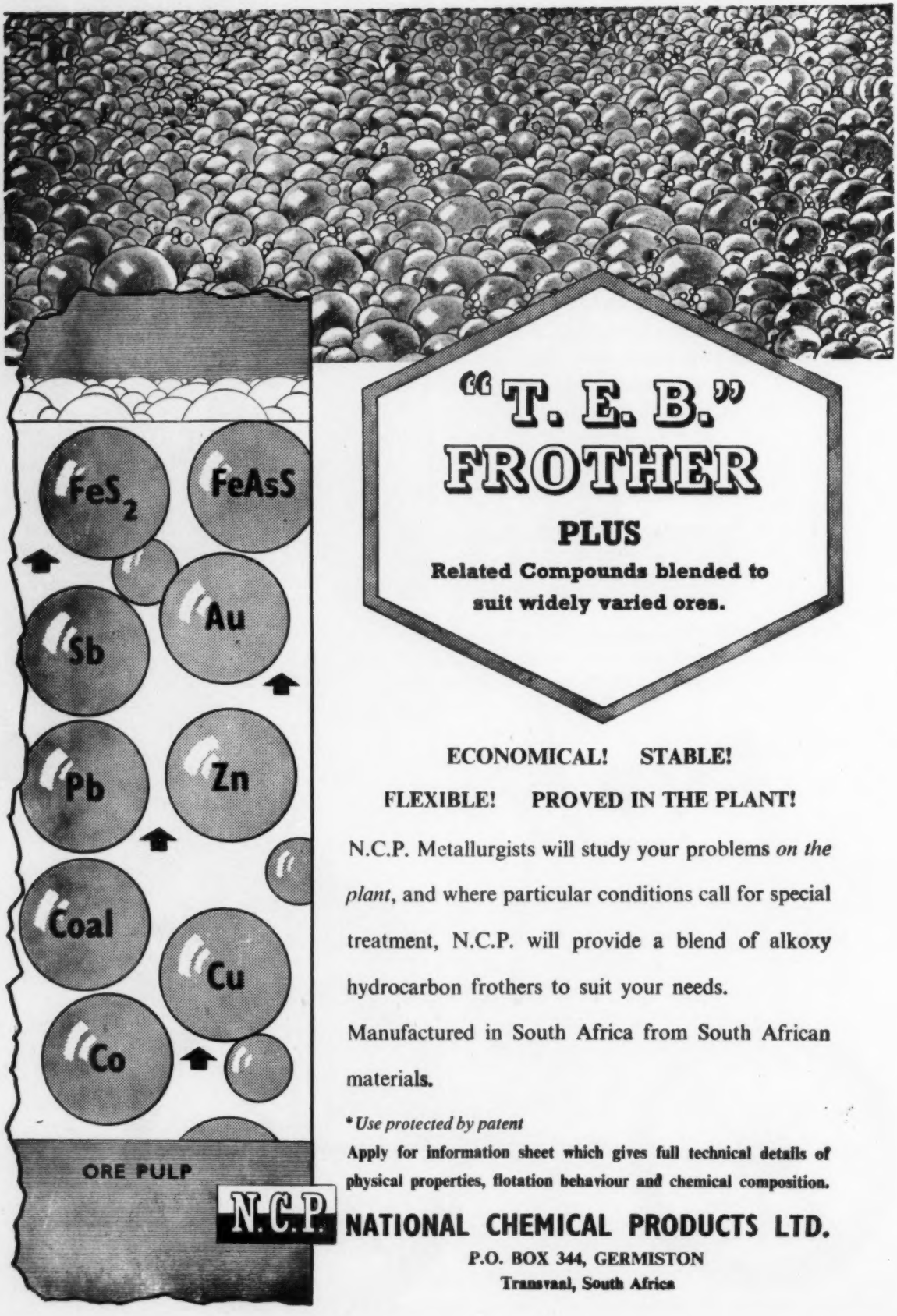

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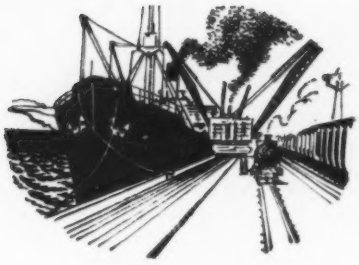

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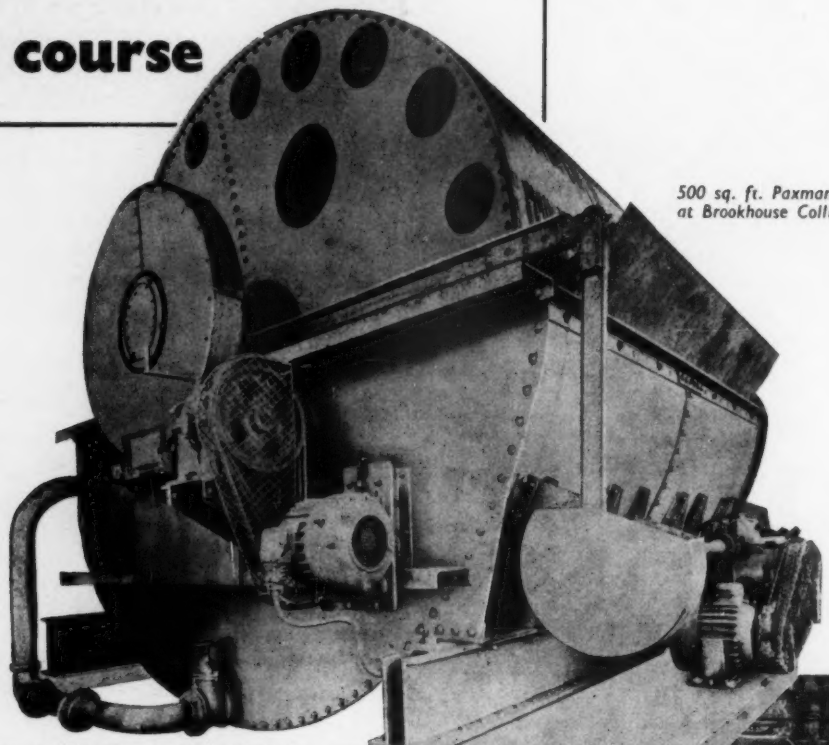

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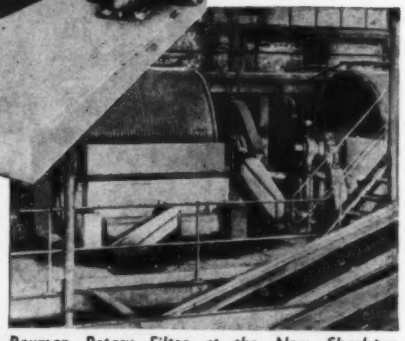
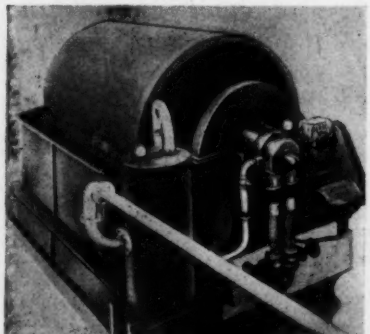
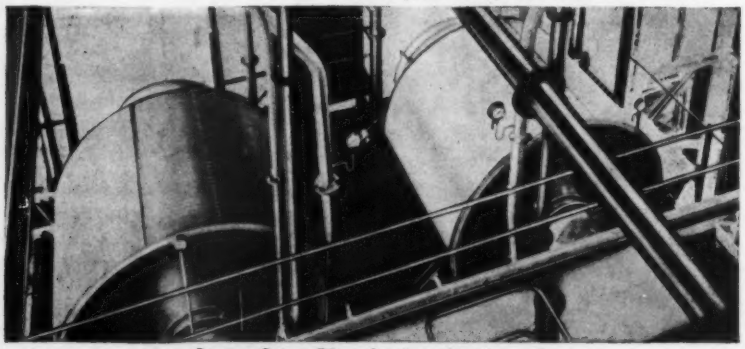


Paxman Rotary Filter at the New Sharlston Colliery, nr. Wakefield, Yorks.



Paxman Rotary Filter for washed coal slurry, as supplied to Richard Thomas & Baldwins Ltd.



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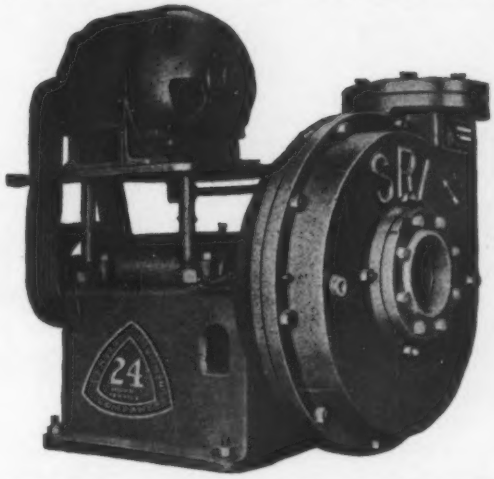

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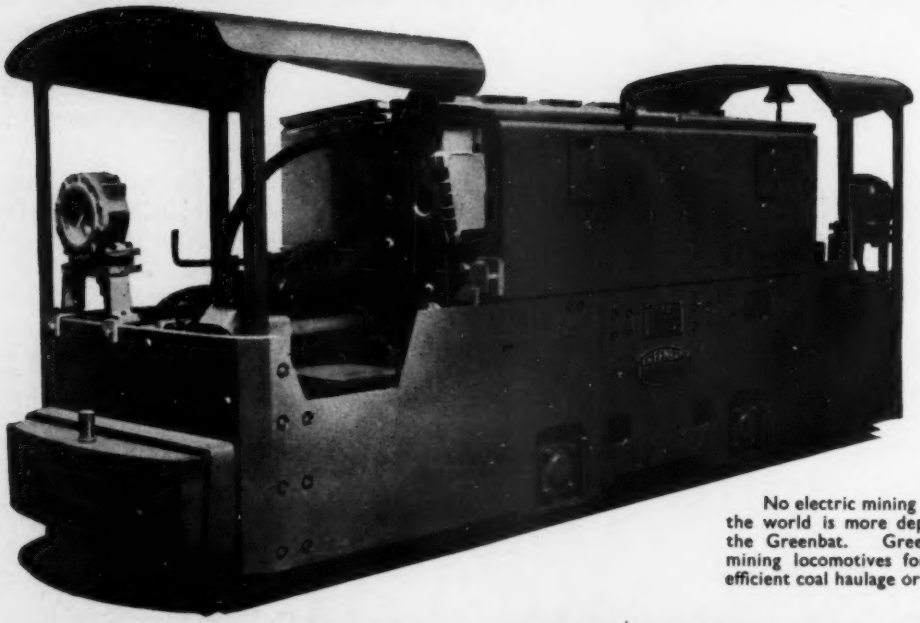

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The Mining Journal

London, August 8, 1958

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Editor
U. Baliol Scott

Deputy Editor
A. Graham Thomson

Assistant Editor
R. Bowran

Assistant Financial Editor
R. A. Nuttall

Display Advertisement Manager
E. S. Hooper

Circulation
Robert Budd

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Russia's Economic Offensive

ON both sides of the Atlantic there is growing realization that Russia's challenge to the Western World is taking the form of an economic offensive, in which a key part is being played by the expansion of the mining and metal industries in the Soviet Union and its satellite countries. The war between Communism and Democracy will be fought not with guided missiles and hydrogen bombs but with industrial equipment and long-term credits — and it has already started.

The economic offensive of the Soviet bloc countries is the subject of a study, running to 111 pages, which has been released by the State Department at Washington. It shows that since 1954 the Sino-Soviet group has concluded agreements with 14 of the less developed countries outside the Soviet orbit, which provide for the extensions of an estimated $1,900,000,000 in intermediate and long-term credits for the purchase of goods and services from the bloc. Of this total about $378,000,000 consisted of credits for the purchase of Soviet bloc arms extended to Egypt, Syria, Yemen, and Afghanistan. The remaining $1,500,000,000 for economic purposes includes $464,000,000 in credits to Yugoslavia.

Communist China is the only bloc country providing grants of any consequence. To date it has granted $55,000,000 to Cambodia, Ceylon, Nepal, and Egypt. The U.S.S.R. has concentrated its activities in a relatively few major deals. One of these is $132,000,000 for a steel mill for India, together with a credit of $126,000,000 for the same country.

Virtually all Soviet and satellite assistance is in the form of interest-bearing credits to finance specific development projects, perhaps because it is feared that interest-free loans or grants might arouse suspicions as to possible "strings" attached. In common with the U.S., but for rather different reasons, the Soviet bloc is also making use of barter agreements to oil the wheels of external trade relations.

It is noteworthy that, according to the U.S. Government's study, rolled steel is one of the primary commodities used in the economic offensive in the Middle East, South Asia, and South-West Asia. The Soviet has also emerged recently as a substantial exporter of certain metals : notably tin, aluminium, and platinum. Coming at a time when world markets are depressed, these sales have given rise to speculation as to whether they are inspired by normal commercial motives or whether they are, in fact, a form of economic sabotage. Thus, a leading U.S aluminium producer, Reynolds Metals, alleges that the Soviet bloc is waging a subtle and insidious warfare against the Free World aluminium market. So far as tin is concerned, the announcement that Russia is willing to become "an observer member" of the I.T.C. but not to join the Agreement as a producer member, has thrown little new light on the Soviet attitude to the world metal markets.

Mining machinery also appears to be playing an important part in the Soviet export drive. Visitors at International Industry Fairs in Asia, Africa and elsewhere are being exhorted to buy made-behind-the-curtain machinery of all types. The machines in question may well be copied from Western models; pirating of patented

designs is a risk which cannot be overlooked when orders for machinery and equipment are received from the Soviet bloc. However, the fact that designs may be based on British or American patents is unlikely to be common knowledge in countries where Russia is acquiring new prestige as a producer and exporter of machinery. It need scarcely be added that Russia's own genuine achievements in the design and development of mining machinery and equipment are too considerable to overlook.

Perhaps the most significant pointer to Russian progress is the readiness with which overseas experts are now being allowed to visit mines, steelworks and other industrial establishments in contrast to former policy. A Canadian uranium geologist who recently had the distinction of being the first foreigner to be shown over a Soviet uranium mine and also visited large manganese and iron mines, stated that the operating techniques were fully on a par with those used in Canada. Other experts appear, almost without exception, to be equally impressed with what they have seen in their particular fields.

In view of all the evidence which has lately been forthcoming from professional sources whose reliability is beyond dispute, there can no longer be any doubt as to the ability of the Soviet bloc to continue its economic offensive on a rapidly increasing scale. Particularly disquieting is the unescapable impression that, despite Western progress in aerial prospecting and geophysical techniques, Russia (and possibly China as well) appear to be leaving us behind in the co-ordinated development of mineral resources, which is the foundation of all economic development.

Perhaps the explanation lies, at least partly, in the fact that Russian industry is not concerned with booms or slumps or with forecasts of coming trends. Its job is to produce and expand on ministerial instructions. It is this rather terrifying singleness of purpose which inspires the Russian economic offensive and presents such a formidable challenge to the West.

POWER FOR THE DAMODAR VALLEY

The World Bank has approved a loan of $25,000,000 to India for projects to increase the supply of electric power in the Damodar Valley, the heart of Indian heavy industry. These projects will add 225,000 kW. of thermal generating capacity to the power system of the Damodar Valley Corporation. This semi-autonomous organization was established in 1948 to execute a scheme for the unified development of the Damodar Valley lying north-west of Calcutta in the States of Bihar and West Bengal. Capital requirements of the D.V.C. are provided by the Central Government and by the Governments of Bihar and Bengal.

The Damodar Valley, because of its rich mineral resources, has become the most highly industrialized region in India. In the Valley area is most of India's iron ore and about three-quarters of its coal, mica, and chromite. It is the site of the two largest iron and steel mills, and a third is now being built at Durgapur. The supply of coal, iron and steel has been the basis for the establishment of a wide variety of industries in the Valley — steel fabricating plants, locomotive works, foundries, plants for the manufacture of wire, cable, pipes and machine tools, and many others. It also has aluminium and cement plants and a large fertilizer plant. The main railways running through the Valley furnish direct transportation for the raw materials and products of the rest of India and the nearby port of Calcutta is the outlet for its foreign trade.

The most significant undertakings of D.V.C. thus far have been the building of four large multi-purpose dams for the storage of flood waters, electric power generation and irrigation; a 150,000 kW. thermal power plant at Bokaro — the largest thermal plant in South Asia; a power transmission and distribution system; an irrigation barrage at Durgapur and a canal system to irrigate about 1,000,000 acres of land in the lower Valley. Some of these projects have been completed and all will be finished by the end of 1959.

The current loan will help to finance the installation of an additional 75,000 kW. of generating capacity at the Bokaro thermal plant; a new 150,000 kW. thermal power station which will be adjacent to the government's new steel mill now under construction at Durgapur; and additional transmission and distribution facilities. The total cost of the projects is estimated at the equivalent of $56,000,000; the Bank's loan will cover most of the foreign exchange requirements. Construction of the projects is now under way and is scheduled for completion by 1960.

Power from the D.V.C. system is transmitted over a 1,000-mile network throughout an area extending 125 miles on each side of the Damodar River. Its chief customers are four large utilities, two state agencies which supply power for urban and rural electrification in Bihar and Bengal, two railways, and a number of large industries including the Tata Iron and Steel Co., Indian Iron and Steel Co. and Chittaranjan Locomotive Works. A recent survey shows that the D.V.C. must more than triple its generating capacity — to about 700,000 kW. — by 1962 if it is to meet the expected demand of this rapidly growing industrial area.

The loan will be for a term of 20 years and will bear interest of 5¾ per cent, including the 1 per cent commission which is allocated to the Bank's Special Reserve. Amortization will begin August 1, 1961.

BILLITON LOOKS ELSEWHERE

The report for the year 1957 of the N.V. Billiton Maatschappij is, one feels, coming close to the end of a chapter; and the report for 1958 — when it comes to be written — may well provide the climax. The 1957 report, in fact, describes the difficulties that have attended the company's efforts to keep things going in Indonesia.

On the actual output of tin the report has little to say. A table of world and Indonesian tin outputs is reproduced accompanied by the laconic statement, "During the past few years Indonesia's tin ore production has been declining both absolutely and relatively and in 1957 she had to give up to Bolivia the second place among the tin ore producing countries". No explanation is offered, partly because the reasons are too well known already, partly because some delicate negotiations lie ahead of the company if it is to be able to salve much from the wreckage of its endeavours in Indonesia. So with the transfer of profits. It is simply stated that no official authorization has been made to transfer profits for 1956 or 1957; there is no comment, no complaint.

These are the all too common difficulties of great pioneering companies still trying to operate in countries heady with nationalism, ignorant of economics, and complaining as loudly as any boxing manager, "We wuz robbed".

But in February of this year the Indonesian Government announced that it was bringing to an end the partnership of N.V. Gemeenschappelijke Mijnbouwmaatschappij Billiton. This falls outside the period reviewed, but the report cannot be understood without reference to it; for the dissolution was known when the report was written. As the directors freely admit, this is bound to be financially disadvantageous. But the real loss is that "for almost 100 years our company has managed the exploitation of the

tin ore deposits in the Isle of Billiton, and the ties that have come into existence as a result are not exclusively of a financial character". How the interest in Indonesia will be liquidated and on what terms is a matter now for referees. But it is worth bearing in mind that Holland has some bargaining strength if a fair ruling is not observed, for there is the Indonesian Government's interest in the Arnhem smelter to be used as a counter. How strong this counter may be is uncertain. The Indonesians seem now bent on sending their ores to Texas, and to that extent may be reconciled to writing Arnhem off.

A further point is that, since the February decision, the Indonesian situation has further altered. A revolt has been attempted, and, although it was crushed more easily than expected, it is still in being as a guerilla movement. There is no knowing as yet how far a guerilla war may sap the strength and ruin the economy of the country; nor is it possible to say to what extent the fact that an insurrection was even attempted will drive the Indonesian Government in closer association with the Communists. On answers to these questions will depend the government's capacity to make the capital payments involved in dissolution.

Meanwhile — and as if further to emphasize that in the long run the Indonesian Government will lose more by this rupture than the company — the report gives details of new ventures. Lead, zinc and copper at Nigadoo, and niobium in Tanganyika, are among the new enterprises; and bauxite is being searched for in Angola and Guinea, and in Surinam. Surinam will, in fact, be a major part of the company's efforts and it carries with it political dangers. Indonesia claims the territory. There is little likelihood of her gaining it. But a success for the Dutch in Surinam will no doubt irritate the Indonesians especially if, as seems likely, their own mining enterprises are inefficient.

BRAZIL'S RISING MINERAL EXPORTS

A notable expansion in Brazil's mineral exports is indicated by the final statistics for last year's trading. Our correspondent writes that in 1957 licences were issued to export 4,344,037 tonnes of minerals, valued at U.S.$98,157,166, as compared with 3,303,269 tonnes, valued at U.S.$38,940,183, in 1956. The following were the principal exports in 1957, comparative figures for 1956 being given in brackets and values in $U.S.:

Iron ore: 3,520,977 t. (3,019,176), $48,800,378. In addition 77,500 t. of fines and 17,364 t. of run-of-mine ore were exported, the latter experimentally.

Manganese: 798,909 t. (251,899), $41,000,532. Amapa shipments accounted for 667,590 t. of the total.

Columbite-tantalite: 129,835 t. (149), $418,850.

Barytes: 10,000 t. (280), $90,000. Bauxite: 3,165 t. (21,005), $92,984. Magnesite: 2,320 t. (1,980), $94,184. Beryl: 1,938 t. (2,307), $765,855. Scheelite: 1,609 t. (1,439), $3,817,678. Rock crystals: 1,387 t. (943), $1,086,745. Mica: 866 t. (989), $1,192,566. Amblygonite: 501 t. (none), $38,696. Wolframite: 215 t. (454), $253,138.

Our correspondent reports continued progress in the development of the country's mineral resources. The Santa Blandini copper mine at Itapeva, Sao Paulo, has started production and the first drillings show that the mineral vein extends to a depth of over 1,600 ft. The Department of Mineral Production, in collaboration with the concessionaire, has drawn up a programme of work to be carried out.

The concessionaires of the Urucum deposits near Corumba in Mato Grosso, the Chamma Brothers and U.S. Steel Corporation, have started exporting manganese experimentally. The first lot of 200 tonnes, part of an order for 3,000, has been shipped to Uruguay by vessels of the Plate Basin Navigation Service. The mining company aims to speed up production and exports after installing the imported equipment, now due to arrive at Urucum from Santos. The equipment includes a 1,200-ton tug and eleven lighters of 1,500 tons capacity for shipment of the ore over the Paraguay River to Nueva Palmira, in Uruguay, where it would be transferred to ocean-going steamers. Construction of the river port at Corumba, as well as of the road from there to the mines and the ocean port at Nueva Palmira will be completed this year, permitting shipment of 75,000 tonnes of ore in 1959. The company will then start on the next stage of expansion, which is to raise export capacity to 150,000 tonnes. The latest estimate places the Urucum manganese reserves at between 40,000,000 and 65,000,000 tonnes, the Mn. content ranging from 45 to 50 per cent. That of the Amapa deposits is between 46 and 54 per cent.

EUROPE'S NUCLEAR INDUSTRIES

Confidence in the European nuclear industry is expressed in the report which the Euratom Commission has submitted to the European Parliamentary Assembly. The total capacity of the eight power reactors built, under construction, or planned in the six Euratom countries will be in the region of 660 MW. Of these reactors (five in France, two in Italy and one in Belgium), the only one as yet in operation is Reactor G1 at Marcoule, in France, which is still of an experimental character. The maximum installed nuclear power capacity of the Community by 1965 will probably be in the region of 3,500 - 4,000 MW.

The total number of research reactors built, under construction, or planned, is twenty-five, of which seven are at present in operation (five in France, one in the German Federal Republic, and one in Belgium).

As regards nuclear power costs, it has been seen that in certain conditions nuclear electricity is already competitive with conventional electricity and it will become more and more so.

On the subject of fuel supplies, the report points out that the uranium output at present available to the six Euratom countries is less than 700 tonnes a year, compared with 8,000 tonnes a year in the U.S. and a probable output of 10,000 - 15,000 tonnes per year by 1960 in Canada. Current uranium output is expected to increase greatly, however, and the Community has access to large reserves which will reduce import needs once they are put into production.

CANADIAN COAL

The Canadian Coal industry has been in the doldrums for many years now, and the government has been obliged to subsidize transport in order that solid fuel can compete with oil and gas. A few months ago the government announced a new scale of subsidies on the movement of coal from the Maritimes and a further 55 c. a ton shipment subsidy has just been decided upon to guarantee that 175,000 tons of Nova Scotia coal can be delivered to Belleville, Ontario. This tonnage will replace U.S. coal shipments brought over Lake Ontario.

Production of Canadian coal is currently running about 10 per cent lower than the corresponding period of last year despite a 5,000,000 tons drop in imports designed to stimulate home production. The Canadian coal industry faces a formidable team of opponents — cheap U.S. coal, natural gas and last, but by no means least, oil.

Hydraulic Stowing in Polish Coal Mines

A CHARACTERISTIC feature of the coal deposits of Upper Silesia is the occurrence of thick seams. The richest of these is the 510 seam, as much as 20 m. in thickness. This seam was intensively exploited in the second half of the 19th century, especially between 1880 and 1892.

The method then in use of working by collapsing long rooms of 10 to 50 m. not only produced considerable losses of coal, but also led to a series of difficulties. The goafs in seams not cleanly extracted were the cause of fires which became the plague of Polish mines, and the process of caving sometimes produces great changes on the surface, which in turn creates the threat of encroachment by water. The history of Polish mining contains a number of cases of inundation of mines and their destruction from these causes. Moreover, surface changes cause grave damage in buildings, which in a densely built-up mining area leads to serious losses, and makes it necessary to leave considerable amounts of coal in sustaining pillars under towns and industrial plant.

The first idea of using hydraulic stowing arose at the end of the last century in the mines situated on the River Przemsza. The observed phenomenon of the silting up of goafs with sand brought down by water as a result of disturbance of the surface by mining works suggested the idea of using this process to extinguish fires. We have every evidence that this method was sporadically used in the Niwka colliery, and that it was employed on a wider scale in the Paryz colliery in Dabrowa Gornicza in 1894, in the extinguishing of a fire in one of the shafts.

Above, at top left, a multi-bucket loader at the Pyskowice sand deposit

Alongside, at bottom right, the Niwecki system, showing conveyor and water channel

The experiments of the Paryz and Niwka collieries were made use of in the Myslowice colliery. Here, in 1901, the first reservoir for waste, with a capacity of 80 m³, was built. In place of the wooden channels hitherto used, welded sheet metal pipes were introduced in the shaft. From this period a steady development of hydraulic stowing may be noted. This demanded the solution of a series of practical and theoretical problems in construction and exploitation of appropriate installations.

The year 1908 was a key one in the development of hydraulic stowing; in this year seamless pipes were substituted for sheet metal ones. Further developments in this field were the use of pipes lined with porcelain (1911), pipes with a manganese steel lining (1921), and finally of pipes with a basalt lining. All these innovations were directed towards significant reduction of the use of piping, with simultaneous reduction of costs.

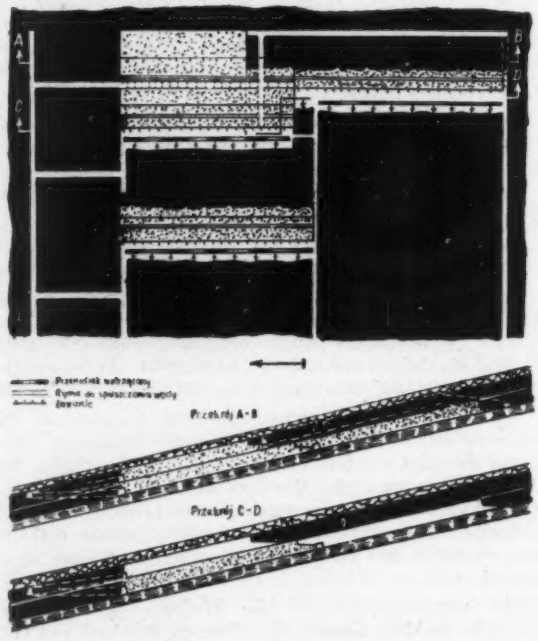
The use of hydraulic stowing also demanded the elaboration and introduction of systems of seam working adapted to this type of packing, and the development of appropriate construction for dams, both for sections of the face and for working walls; in this connection in the course of time wooden dams were replaced by linen ones.

In 1927 the so-called " myslowicki " system of 50 metre long sections filled from above with sand, was introduced. In 1927 also the " knurowski " wall system with transverse layers was developed, and almost simultaneously with it came the " niwecki " system with long sloping walls, while 1930 saw the introduction of a new technique of stowing, depending on packing under pressure, giving a compacted filling. The question of the drainage and purification of the water used in the stowing process, and several other problems, also demanded solution.

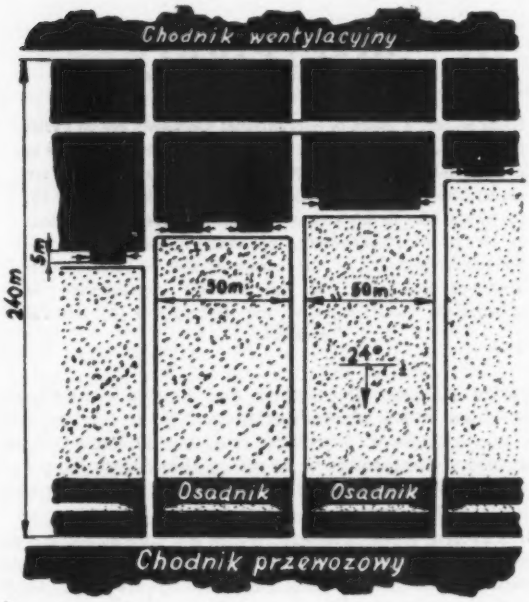
Parallel with the development of the scope and technique of hydraulic stowing, a series of theoretical works were produced; the theory of the movement of the stowing compound, evolved in 1929, made it possible to calculate a piping system for hydraulic stowing, and to plan stowing installations.

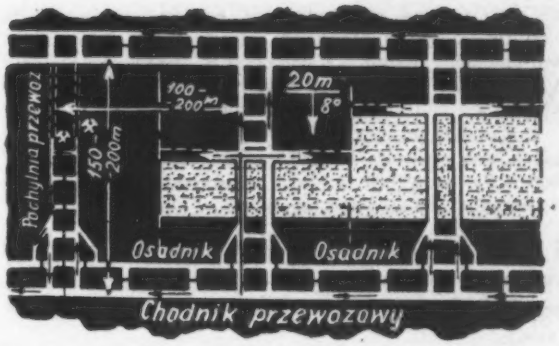
With the ever-growing use of hydraulic stowing there arose the question of assuring the coal industry of adequate supplies of sand for stowing.

Before the Second World War material for stowing was obtained from local sand pits exploited by individual collieries,



or at most by a group of neighbouring collieries mainly under the same ownership. The private ownership of mines did not favour a general solution of the problem, and meantime the local sand pits suffered rapid exhaustion of supplies, and it became progressively more difficult to find nearby sources of sand of appropriate quality. It is to be noted that not all types of sand lend themselves to stowing purposes, and in particular sands for stowing must not contain too great an admixture of loam (maximum 15 per cent). These admixtures complicate the process of silting up by delaying the draining out of water from the stowing compound in the working, as a result of which the packing does not compact, and fails to fulfil its function.





The line runs through a heavily built-up industrialized area, and has a series of bridges and culverts.

It represents a gigantic investment, one of the most important in Polish post-war construction, having a remarkably far-reaching significance. Its significance is based on several factors. The use of hydraulic stowing in mines is, of course, costly. Hydraulic stowing today accounts for about 12.5 per cent of our costs, and absorbs up to 4 per cent of the labour power of the mines.

Central supplying with sand lowers exploitation costs of sand, and costs of delivery to the collieries. In this way the sand line, ensuring constant operation for the mines, will amortize itself in the course of 10 years. Resources of sand in the sand pits near collieries are limited. In the Myslowiec area many are already exhausted, in the Dabrowski region supplies are failing, and in the central area none exist whatsoever. Thus the great task of the sand transport system is the building of lines, the linking of sand deposits with the collieries, and the supplying to them of sand.

By BOLESLAW KRUPINSKI

Chairman of the Polish State Mining Council, and Vice-Minister of Mining

The nationalisation of the coal industry after the Second World War, and the establishment of a central direction for the industry, created a quite different situation.

The post-war years have witnessed a decisive development in hydraulic stowing. The idea came into being of the extension of the practice to all the mines in the central area, of central supply of sand to collieries, and against this background there developed the concept of a sand line.

It is a fact that the building of a sand line was taken into consideration in the first investment plan worked out by the coal industry after the liberation of the country, i.e. in the plan for 1946. At the beginning of that year preliminary plans were worked out for such a line, envisaging two branches, south and north. The period of building was estimated at ten years, and the cost at about 70,000,000 pre-war zloty. Preliminary studies were essential, and in 1946 and 1947 research was carried out on the sand deposits in the basin of the Przemsza river, mainly in the areas of the Pustyna Bledowska and the Pustyna Starczynowska. Today, two branches run north and south from the Pustyna Bledowska sand depot (2.5 milliard cu. m. of sand); these run down to the north-western part of the coalfield and join up with the railway system coming from the Klodnicki sand pits. The total length of railway line built as an extension of the existing lines in collieries and previously used sand pits, of the central sand line, and of sidings, amounts to several hundred kilometres. The transport capacity of the sand line is 100,000 m.³ of sand per day.

The development of hydraulic stowing in Poland is outlined in the following figures. The length of operative piping for hydraulic stowing in collieries in 1955 amounted to 564 km. The number of hydraulic stowing installations in 1945 was 46; this had risen to 81 in 1955, and will rise further to 95 in 1960. Requirements of packing material in 1946 were 7,600,000 cu. metres. The figure rose to 14,100,000 m.³ in 1949, and to 24,000,000 m.³ in 1955, and should reach 30,000,000 m.³ in 1960. This great quantity of sand can only be transported by central management, possessing modern means of working the sand and of transport (the sand line is to be electrified in its entirety), and with full centralisation of distribution of sand.

A series of special installations was designed and constructed for the purpose. Extraction of sand is accomplished by multi-bucket excavators with an output of 700 m.³/hour. Appropriate equipment is used for shifting the rail tracks over

At centre left, the Knurowski system, showing ventilation passage (chodnik wentylacyjny)

At top right, the Myslowicki system, showing transport incline (pochylnia przewoz), sediment (osadnik) and transport roadway (chodnik przewozowy)

the sand workings as they advance. Special large wagons are used for transporting the sand; these are adapted for use on self-unloading bridges. Trains of 24 of these wagons, with a total capacity of 580 m.³ of sand are hauled by a 1,500 kW. electric locomotive, weighing 118 tons.

Collieries build stowing installations according to standard plans, which provide for packing reservoirs of capacities of 600, 1,500 and 3,000 m.³ with appropriate mechanism for washing out the sand at a rate of 400 m.³/hour.

Of the total coal resources lying to a depth of 1,000 m. in the Upper Silesian coalfield, only 25 per cent can be exploited by caving or by use of dry packing. A further 22.3 per cent of the coal resources demand the use of hydraulic packing. A further 36.7 per cent needs closer study, but undoubtedly a large part of this will also require the application of hydraulic stowing. The remaining 16 per cent is accounted for by existing sustaining pillars.

Working in the sustaining pillars is already possible by the use of hydraulic stowing and by the choice of an appropriate method of working, thus permitting reactivation of immobilized resources of pits, and the maintenance of production capacity.

Hydraulic stowing introduces fundamental changes in systems of working in mines, increases safety, operates against mining subsidence, and prolongs the life of mines. In short, it is an expression of technical and mining progress.

A Wrong Conception of Sovereignty ?

Early in July a group of international specialists met in Paris, purely on a private basis, to consider the problems involved in assuring adequate supplies of minerals for the world's future needs. Their conclusions were published in our issue of July 18, pp. 67 and 68. In this article we summarize some observations by Dr. F. W. Friedensburg, of Germany, whose theme was the interdependence of the industrial and so-called underdeveloped countries and the harmful consequences of nationalistic isolationism in the development of mineral resources

As a working formula, an industrial country is defined in this paper as one which exports more manufactured goods than it imports. At the present time the industrial countries are Austria, Belgium, Canada, Czechoslovakia, France, Germany (combined West and East), Great Britain, Italy, Japan, the U.S.S.R., Sweden, Switzerland, and the U.S.A. All other countries — of which there are in the region of 150, accounting for more than two-thirds of the area and population of the world — are regarded as non-industrial.

All minerals are quite irregularly distributed over the earth's surface and there is no country, or combination of countries, which is entirely independent of supplies from other countries. The statistical situation of the Communist countries seems to contradict this statement, but here we have a forced adaptation of consumption to supply, such as occurred in the belligerent countries during the war. Of course, dependence on other countries varies enormously, but even the biggest and strongest industrial countries such as the U.S. and the U.S.S.R. are importing minerals in considerable and increasing quantities.

No One Stands Alone

As an example of this trend, it is shown that within the period 1913-1956 the contribution of the 13 industrial countries to world production of oil fell from 80 to 56 per cent. In 1913 these countries, taken as a whole, produced more than their needs of oil, but in 1956 they produced only 74 per cent of their needs.

In coal the situation is rather more favourable, but here, too, the surplus of production in the industrial countries — taken as a whole — has been transformed slowly into a deficit. In iron, where very marked efforts have been made practically everywhere to reach a considerable degree of self-sufficiency, the needs of the industrial countries were covered by domestic production at a rate of 93 per cent in 1913 and 91 per cent in 1956. In the same period the downward movement in self-supply was from 73 to 63 per cent for copper, 80 to 66 per cent for zinc, and 57 to 50 per cent in lead. This trend has also been very pronounced in manganese, chromium, wolfram, bauxite, phosphates, and in the many minor metals and industrial minerals.

The seriousness of the situation becomes still more apparent when the trends in individual countries are considered. In the U.S. oil imports from non-industrial countries rose in the period 1913-1956 from zero to 8 per cent of the total importation; zinc and lead imports increased from zero to 50 and 91 per cent respectively, and at the same time the total quantities imported increased very steeply. For Western Germany the contribution of the non-industrial countries to total imports has risen in oil from 14 to 89 per cent, in coal from 4 to 8 per cent, in iron ore from 36 to 44 per cent, in copper from 7 to 53 per cent, in zinc from 35 to 45 per cent; only in the case of lead has the proportion diminished.

It is evident from these figures that the part played by the non-industrial countries in the development of the world's mineral output is becoming progressively greater. These countries — always taken as a whole — contributed 45 per cent of world oil output in 1956 compared with 20 per cent in 1913. In the case of coal, their share of world production has risen from 12 per cent in 1913 to 22 per cent in 1956. In iron ore the non-industrial part of the world contributed 11 per cent of world output in 1913 and 22 per cent in 1956.

In the case of copper, the non-industrial countries accounted for 36 per cent of world output in 1913 and 47 per cent in 1956. In the same period their share of total world consumption increased fourfold from 2.7 to 11 per cent. Similarly, the non-industrial countries now supply 53 per cent of the world's lead requirements against 47 per cent in 1913 and 42 per cent of its zinc requirements against 33 per cent in 1913.

This tendency is, of course, quite a natural one, and from the standpoint of international collaboration it can only be hailed as welcome and healthy. On the other hand, it must be clearly recognised that our economic well-being — perhaps our very existence — is dependent on the unrestricted continuation of this flow. Unfortunately, this can by no means be taken for granted.

High Cost of Mine Development

Within the last hundred years the world's population has increased about 2½-fold, whereas the consumption of coal has increased twenty-fold, that of copper 40-fold, and of iron 60-fold. In the case of many mineral commodities such as oil, aluminium, uranium, manganese and nickel — which a century ago had little more than scientific value, the increase

in consumption has been astronomical. Even with the whole world to draw on, every effort will be needed to supply within the coming decades the quantities required. In view of the irregular geographical distribution of mineral resources, the success achieved will depend entirely on international collaboration ; upon the comprehensive exchange of raw materials and manufactured goods between countries. In this respect the situation is alarming, a perturbing factor being the growing tendency in many countries to nationalistic isolationism in economic affairs.

It is not only a problem of trade. Still more important is the question of investment and development. The search for minerals in explored—and still more in unexplored—territories is necessarily dependent on a high degree of knowledge, skill and initiative, and also on very heavy expense. Neither the industrialised nations nor the so-called under-developed ones are satisfied with the present situation in which food and industrial goods are in under-supply for a large part of the world population. It can safely be forecast that the need for minerals will increase quite out of proportion to the regular growth in population.

The Problem of Rising Costs

The mining industry is faced with the prospect of rising costs, inasmuch as practically everywhere the expansion of output will demand penetration to greater depths or to more remote places. Hence the required new mining capacities will call for ever-increasing financial investments. In very round figures an investment of $3 is required today to produce a mineral output with an annual value of $1. Thus, if the total value of world mining increases at an average rate of 5 per cent annually — i.e., by $U.S.2,000,000,000 annually — in order to keep pace with the depletion of resources and with increasing consumption, we must invest every year new capital to the total amount of $U.S.6,000,000,000.

There is no doubt that the under-developed countries, whose mineral resources are indispensable to the world's industry and hence to our very existence, are in no position to furnish the necessary capital for the development of these resources. Moreover, with a few notable exceptions, these countries have no citizens of their own with the scientific knowledge and with the technical skill and experience which are needed for the work of investigation, of development and of exploitation in modern mining. We have thus a situation in which the industrial countries are dependent to a fast-growing degree on the mineral resources of the other countries, who in turn depend on the industrial countries financially and technically for the development of these resources.

In view of this clear inter-dependence, it is the more regrettable that the practical consequences are being overlooked, especially by the peoples and even the governments of some non-industrial countries, who seem less and less inclined to give to the other countries the opportunity to invest technical skill, work and money in the development of resources necessary for all. Existing enterprises created under a more favourable political climate are in danger of being confiscated or at least of being so exploited, so drained financially, that the necessary commercial results are no longer guaranteed.

Certainly many of these mining enterprises are distributing handsome profits, but it should be borne in mind that the initial costs for research and investigations and the losses caused by many failures do not for the most part become known. It is certain that only the possibility of good profits will induce the foreign investor to spend his money at all, and the development of international mining would not have taken place without the possibility of investing money with these prospects.

There is no doubt that in many cases profits excite the desire of the local populations to retain them. Yet it can scarcely be denied that in many cases foreign enterprises in the non-industrial countries have proved to be of tremendous benefit to the social and cultural progress of the local populations, that the immediate surroundings of the plants are models for the rest of the country, and that the taxes and contributions received from these enterprises are often the backbone of the entire financial structure of the country.

Effects of Nationalisation on Investment

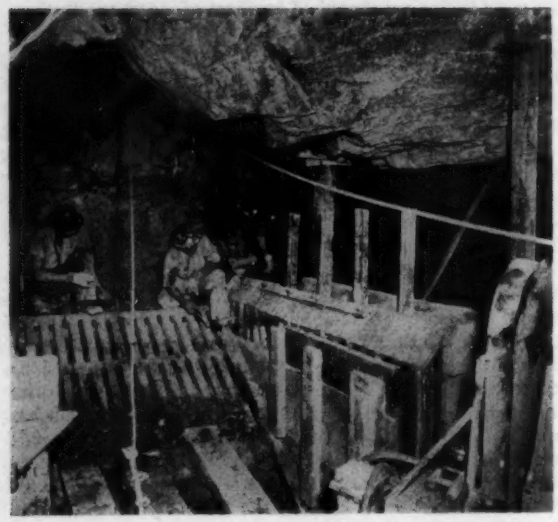
Unfortunately the tendency to acknowledge this fact is by no means general. Regardless of what has been done in the past or will happen in the future, the governments and peoples of the countries concerned often have an urge to take over foreign enterprises. In Mexico the oil industry created by North American, British and Dutch capital was confiscated by the government in 1938, with the result that output, which had already deteriorated under the growing menace of nationalisation, has never regained its former extent. Mexico, which in 1924, contributed 15 per cent of world production, must import oil from other countries for its fast growing needs instead of supplying the rest of the world. Moreover, the financial results of the State-owned company are far below the profits which Mexico had drawn from the former foreign enterprises.

After nationalisation of the Iranian oil industry by Mossadegh's government, the yearly output fell from 30,000,000 tons to less than one-twentieth of this figure and the country ran into grave economic difficulties, which forced the ruler of the country to dismiss Mossadegh and revise the oil policy. Experience has been similar in Bolivia, where the oil industry was confiscated in 1937 and the tin mines in 1954, and in various other countries.

In practically all cases the taking over of a successful enterprise by the State under the influence of nationalistic passions or Marxist aims has been disadvantageous to the enterprise itself or to the country or to both. In all cases one result has been certain ; the inclination of foreign capital to invest money in enterprises of this nature has been reduced. Consequently, the initiative and spirit of enterprise which are so essential for the development of minerals in foreign countries will not in future be forthcoming with the same eagerness as before the First World War and, already to a lesser degree, between the two world wars.

It is already seen that investments do not go to the places where the best result is to be expected from the geological or technical point of view, but to those countries which guarantee political and juridical safety for the invested money. The preference which Canada is enjoying in the development of its mineral resources as compared with countries in some other parts of the world teaches a lesson which should not be ignored.

Perhaps the fault lies with the wrong conception of sovereignty. At a time where nations recognise more and more that they cannot live by themselves but must work in harmony with each other, respect for the old national boundaries and their implications is obsolete and meaningless. We can no longer regard as correct the conception by which a government or a nation claims an absolute right to dispose of treasures in the soil, the opening up of which is beyond the financial and technical capacity of the people who happen to live above them. In most cases modern mining development has proved impossible under conditions where the mineral resources belong to the owner of the surface and where these owners are unfit to raise the minerals in their soil with their own means. Some countries have been forced to transform their mining laws under heavy sacrifices. Perhaps it should be a duty of nations to regard the mineral resources as a common property and to give the right of exploitation to those best qualified for this task.



Labour Problems at Broken Hill

THERE is prospect of trouble developing at Broken Hill arising from the need to reduce working costs if operations are to be carried on economically under the conditions now existing, and which may continue for some time to come. The issue has arisen from the decision of North Broken Hill Ltd. to retrench 119 men, but the matter has its roots in earlier years.

Prior to 1950, the unions refused to allow men in from outside the field to be employed on the mines unless they had qualified by a period of seven years' residence in Broken Hill. The development and expansion of the Zinc Corporation and New Broken Hill Consolidated mines at the end of the 1940's called for a substantial increase in the labour force, and these companies forced the issue, with the result that the union books were immediately opened to 500 outside men, with a guarantee of the admission of a further 1,000 men at a later date. Mine employees then fell into two categories : (a) men who were employed on the mines prior to 1950; and (b) those whose employment dated later than 1950.

It appears that the dispute now at issue has arisen over the dismissals by the North Company and the interpretation of the agreement entered into in 1950. It is understood that the unions contend that dismissals, if any, should be from the ranks of category (b), but it seems that they go further and are demanding that no category (a) man shall be retrenched while a category (b) man is employed, not on the particular mine involved alone, but on any mine on the line of lode. The threat of immediate stoppage of work over this issue has been deferred pending arbitration on the interpretation of the agreement. The matter is to be enquired into by a Conciliation Commissioner immediately, but it remains to be seen whether his view will be accepted by the unions if it is contrary to their wishes in the matter.

Under existing conditions, mining operations in Broken Hill are uneconomic; it is usually the case that in times of prosperity the labour force tends to increase beyond the margin actually necessary, and if so, there is an obvious remedy, though one obviously disliked by both sections. Another big factor in the way of cost reduction to an economic working basis is the lead bonus; this is based on the selling price of lead, not on profits, dividends or production. The bonus is now about £A9 per man per full week worked, and in view of the serious future outlook for the industry, the matter of the bonus should be given weighty consideration by both parties. Wages on the field are good, but it is an anomalous position that the industry should pay a bonus on a price scale based on a price per ton of lead which was then high, but is now impossible as a starting point for the payment. At today's market prices operations are unprofitable, but the bonus is still paid.

In an effort to control over-production of lead and to help in the restoration of the price, the Broken Hill companies have reduced their production 10 per cent, by adopting a working fortnight of nine days instead of the previous ten days. Since its introduction, there has been a definite decrease in ore mined and metals produced.

These illustrations show the Broken Hill mining scene

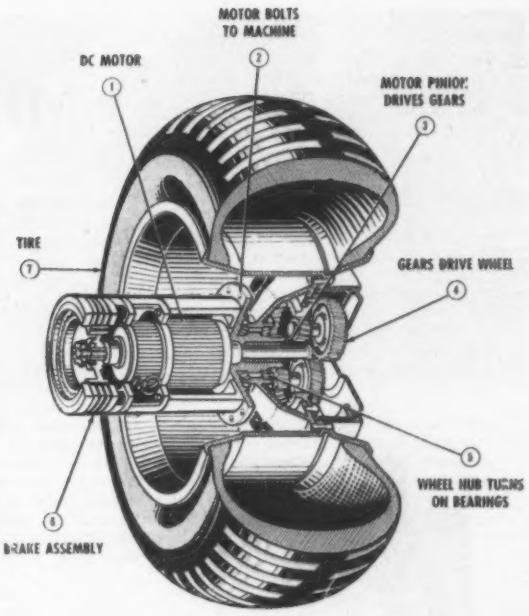
Top : Modern headframes at the Zinc Corporation Ltd. typifies the up-to-date design of the entire plant

Centre : Construction of an ore pass at New Broken Hill Consolidated

Bottom : The open cut is all that remains of the surface workings of the Broken Hill Pty. Ltd.

Machinery and Equipment

The Electric Wheel Power System



Alongside, at right, inner workings of the LeTourneau electric wheel

Below, the Huwood signal switch, lockout type

It will be recalled that Westinghouse Air Brake Co. bought out LeTourneau's earth-moving business for approximately $31,000,000 five years ago, setting up a new subsidiary known as LeTourneau-Westinghouse Co. Included in the sale was a provision that the original LeTourneau company remain out of the earth-moving field for the five-year period which ended on May 1, 1958.

Thus, with $31,000,000 in the till, the original LeTourneau company has embarked immediately upon a challenging new venture. It undertook the development of super-huge machines; and according to reports, demand is directed mainly towards two specific types of machines—high-capacity scrapers with all-wheel drive, and heavy-duty dumpers for the mining industry.

Chief result of the five-year absence, observers believe, has been development of the revolutionary electric wheel power system—a system which LeTourneau developed for its gigantic non-earth-moving machines, and which the company now plans to also introduce to earth moving for the first time.

In essence, the new system boils down to a relatively simple arrangement of powerful electric motors geared directly to the centres of every individual wheel of a machine, and to all other points on a machine where power is used. The employment of opencast mining machinery using this type of power transmission will likely increase as equipment grows larger in design and construction.

The inner workings of the revolutionary electric wheel are shown in the illustration. The radically different power system already has been thoroughly tested on gigantic machines the company has built for industrial and military uses—some of which employ the largest tyres in the world (4 x 10 ft.). Because from four to thirty-two wheels on every machine use a motor and gear arrangement similar to the type shown above, chief advantages are true all-wheel drive, maximum traction, and no clutches, differentials, etc., to break down or require maintenance. Pointers 1-5 on the illustration show the chain of power from motor to rim of wheel. Diesel engines up to 600 h.p. in size, connected directly to LeTourneau a.c. and d.c. electric generators, are mounted on the machines to produce power for motors in the wheels.

A SAFE SIGNALLING METHOD

In the N.C.B. directive PD/1952/II, it is stated: "Effective means of giving signals, and as soon as reasonably practicable of stopping the conveyor from any point along its length, shall be provided for all gate, trunk and face conveyors. . . ." In literature recently published, Hugh Wood and Co. Ltd. point out that the only signalling system that can be fully satisfactory under present-day conditions is one which can be interlocked with the control apparatus of either haulage or conveyor, and which fails to safety under all conditions of fault.

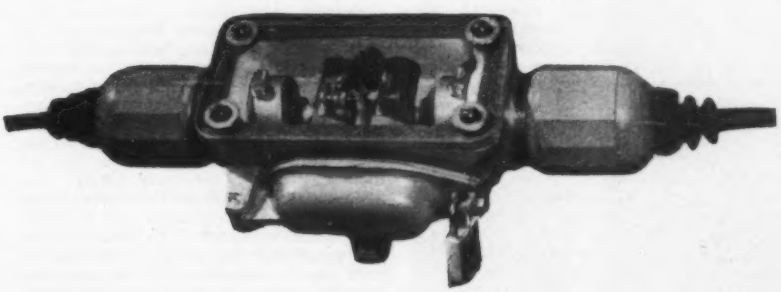
The manufacturer's S.B. signalling system has been designed for use on a.c. circuits, and in addition to meeting the requirements outlined offers the advantage of compact layout. The system can be used on either bare wire or insulated systems, and can operate to the length of approximately three miles.

In operation, the secondary winding of the transformer is connected in series with a relay coil and a half-wave rectifier at the remote end of the system, making a closed circuit. A condenser is shunted across the relay for intrinsic safety purposes and to assist the coil during the blocked half-cycle.

Short-circuiting of the signal wires cuts the half-wave rectifier out of circuit and allows a.c. to flow through the relay, which reduces the effective magnetic flux and allows the relay armature to drop out.

Contacts close to ring the bell, whilst other contacts open the control circuit of the associate apparatus. Any failure of the power supply, breakage of one or both signal wires, de-energizes the relay and performs the same operation.

The S.B. system does not prevent the transmission of normal code signals when the haulage or conveyor is at rest.



VERSATILE IMPACT WRENCH

A number of modifications have been made to the Holman 404 impact wrench as a result of the accumulation of experience of its use in a large number of industries. This experience not only has meant that the tool now in production has better performance and reliability, but it has also confirmed that the 404 is versatile.

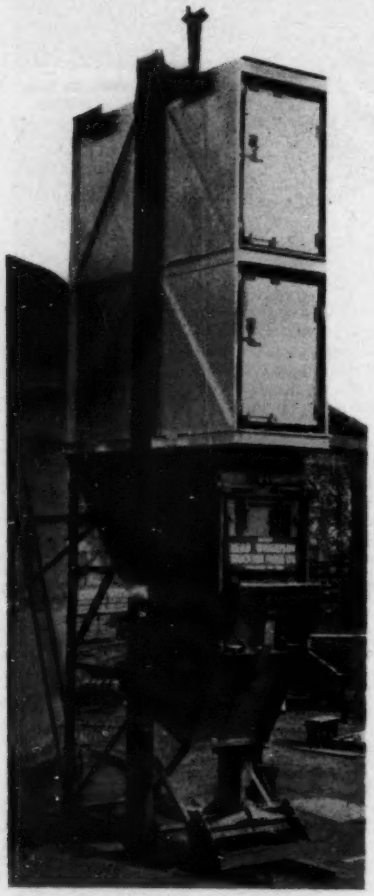
Within its maximum capacity rating of 600 lb./ft. torque at 80 lb. per sq. in. air pressure, the performance range of the 404 makes it suitable for a wide variety of purposes, such as nut tightening and removal, rock bolting, and plate drawing. In addition to use as a wrench,

with the aid of special accessories the 404 can be used for drilling, reaming, tapping, screw driving, and removing screws and broken studs. It can also be used for tube expanding and the cleaning of choked tubes, wire-brushing, and masonry drilling.

MINING MISCELLANY

ORE SKIPS FOR ASHANTI

Head Wrightson Stockton Forge Ltd., a subsidiary of Head Wrightson and Co. Ltd., have been concerned with the supply of equipment to the Ashanti Goldfields in Ghana. The company recently received an order for three ore-carrying skips, each with a capacity of 12,000 lb. of ore. These skips are of com-



A Head Wrightson ore skip of the type supplied to Ashanti

posite construction, being partly mild steel and partly aluminium alloy, specially designed so that existing winding equipment at the mines could be utilized. An all-steel skip would weigh 1¼ tons more than the steel/aluminium alloy supplied, each of which weighs 7 tons 13 cwt.

The skips are fitted with rails on the lower deck to accommodate a mine locomotive or materials car, and they can be adapted to carry men. A trapdoor in the lower deck of the skip is inverted to form a chute into the ore hopper during loading. Ore weight is 100 lb./cu. ft. and capacity 12,000 lb.

In Canada, Raglan Nickel Mines Ltd. and Hudson-Ungava Nickel Mines Ltd. have completed an agreement for the joint exploration of Raglan's 79.5 sq. mile concession in the Ungava nickel belt. Drilling has started at the property, where a crew of twenty men is now at work.

★

The New Jersey Zinc Company, U.S.A., has developed a new, commercial and efficient system of producing manganese iron alloy, spiegeleisen, from ore at its mine at Ogdensburg, New Jersey. This is a result of extensive tests over the past two years on a new furnace based on principles of its sterling process electric arc furnace. Adequate supplies of the alloy should, therefore, be ensured for many years.

★

The first consignment of pure sulphur extracted from Polish ore mined in the Tarnobrzeg region, has been produced at the refining plant for chemical raw materials at Ogorzelec, in Lower Silesia, Poland.

★

Mining of a high-grade iron ore has commenced at Mindale Hill, Nyasaland, C.A.F., and a trial order is being shipped to Europe for further testing. Initial analyses of the ore have shown an iron content of 68 per cent.

★

Chinougamau Jaculet Mines of Canada do not plan any further work on their copper property, but are negotiating with Copper Rand for underground development from the latter's workings. Recovery of gold from Pickle Crown gold mines totalled $727,000 during the first half of 1958, as compared with $753,227 in the previous year.

★

President Sukarno formally inaugurated the Tjikotok gold mine in Banten, West Java, Indonesia, recently. At the opening ceremony, the President said that the mine was a step towards Indonesia's economic stability.

★

In Yunnan and Chinghai and the Inner Mongolian autonomous region of China, deposits of nickel, chromium, boron, and potassium ore have been discovered. Nickel ore outcrops in Yunnan are said to stretch over 300 km., and sedimentary iron ore deposits containing potential iron ore reserves of about 2,000,000,000 tonnes have been located in Hupeh province, near the Yangtse River. Other iron ore deposits have been found in Hopei Province, with reserves estimated at 300,000,000 tonnes. In Szechwan province, iron ore deposits are estimated to amount to 470,000,000 tonnes. Coal reserves estimated at 650,000,000 tonnes have been found at Paishui and Pucheng, and a crystal mine has been discovered in the Tangla Mountains in Tibet.

★

Approximately 1,000,000 lb. of $\frac{1}{16}$ in. thick sheet lead will be used as a lubricating base and seal beneath the walls of water-conveying conduits for the New York State Power Authority's Niagara Power project. The twin conduits, 46 ft. wide and 66 ft. high, will stretch for 4½ miles each. Since a rigid structure could not be economically designed to resist rock squeeze, the cut and fill, hinged-arch design is being employed.

★

A £1,750,000 scheme for the large-scale production of titanium in the Eastern Province of South Africa has been shelved indefinitely because of falling titanium prices. A British-Australian titanium corporation had planned to commence production this year in at least four of eleven areas. Rich deposits of titanium minerals have been discovered over some 5,317 acres near Port Elizabeth.

★

A well equipped chemical and analytical laboratory is now open at Walvis Bay, South West Africa.

★

The Ministry of Mines, Lands, and Labour has announced that the Sierra Leone Government has renewed for the third time the exclusive prospecting licence for the British Titan products and the Columbia-Southern Chemical Corporation. The two joint companies will continue to prospect for titanium-bearing minerals, especially rutile, in the Bo, Bonthe, Pujehun, and Moyamba districts of the South-Western Province. The negotiations which began last December, 1957, for special mining agreements between the company and the Sierra Leone Government have not yet been completed.

★

The number of miners' licences issued and renewed by the Ontario, Canada, Department of Mines, during the six months period ending June 30, 1958, amounted to 6,356. During the first six months of 1957, 7,841 were issued. The total number of claims recorded in the first six months of this year was 11,237, a fall of 5,615 from the total of 16,852 recorded during the same period in 1957.

★

There was a considerable increase in the quantity of iron ore mined in France during the first quarter of 1958, 15,800,000 tons compared with 14,900,000 tons in the first quarter of 1957. Stocks at the end of the month were 3,800,000 tons as compared with 2,500,000 tons at the same time last year.

★

The second part of the joint scheme between the National Coal Board and the West Midlands Gas Board to utilize methane drained from mine workings in North Staffordshire has now come into operation. Last October the scheme was inaugurated by linking Wolstanton Colliery with Etruria Gas Works, Stoke-on-Trent. The completion of the second stage brings Holditch Colliery, Newcastle under Lyme, into the system. Together, the two collieries — Wolstanton and Holditch — are supplying Etruria Gas Works with well over 1,000,000 cu. ft. of methane a day. At each colliery the methane is drawn from the underground workings and is pumped through specially laid mains to Etruria Gas Works. Here it is mixed with the correct proportions of coal gas for adjustment to the declared calorific value. On the basis of calorific values this represents a saving in coal of

up to 1,000 tons a week. The gas drawn from the two mines is sufficient to supply a town almost the size of Newcastle under Lyme. Plans are going ahead to extend the scheme still further to include Chatterley-Whitfield, Stafford and Hem Heath Collieries, all in North Staffordshire.

★

During the first half of this year Austria's coal output dropped to 3,298,102 tonnes against 3,489,917 tonnes in the corresponding period of 1957.

★

Four young geologists from Chile, Ghana, and the Philippines, have arrived in Washington to take part in the United States Geological Survey which started last month. They will be given training in the latest techniques of photogeology by staff members of the Geological Survey, and the course, which is sponsored by the State Department, will continue for a period of seven months.

★

A loan of $2,500,000 is being obtained by Mexico from the Import-Export Bank to acquire the properties of the Mexican Gulf Sulphur Co. in San Cristobal. The company has gone bankrupt and has defaulted on a loan of $1,500,000 from the same bank. Sulphur was first discovered at San Cristobal in 1904, while drilling for oil was taking place in the Isthmus of Tehuantepec.

★

A plant for the extraction of silver, gold, and other precious metals from ore mined at Recsk, central Hungary, is to be completed by the end of next year at a cost of £120,000. Building began in 1956 and so far two tons of silver and four cwts. of gold has been gleaned from the ore, mined originally for its copper content. Precious metals are handed over to the Hungarian National Bank.

PERSONAL

Mr. C. J. Burns has been appointed chairman of the Western Selection and Development Co. Ltd. in the place of Major General W. W. Richards.

★

Major General W. W. Richards has resigned as chairman of the Bremang Gold Dredging Co. Ltd., and Mr. C. J. Burns has been appointed chairman in his place. Major General Richards remains a director of the company.

★

Ten years after the creation of a Maxam Division by Climax Rock Drill and Engineering Ltd., it is announced by the Holman Group, of which Climax is a member, that a new company, Maxam Power Ltd., has been formed, which is to be based at Camborne, Cornwall. This announcement reflects the tremendous developments in the automatic control of production processes and the ensuing demand for pneumatic, hydraulic and electronic control equipment. It also demonstrates the success achieved by the Maxam Division in pioneering the introduction of automatic and semi-automatic control in a vast range of industries.

CONFERENCES AND EXHIBITIONS

A showing of international colliery construction equipment, the first exhibition of its kind in the country, will take place at Gliwice, Poland, from September 10 to 28, 1958. It will consist of a review of the achievements of world technique in colliery sinking and will be attended by twenty-five firms from six countries.

★

The 100th annual general meeting of the South Wales Institute of Engineers will take place on October 16, 1958, at the Institute, Park Place, Cardiff.

★

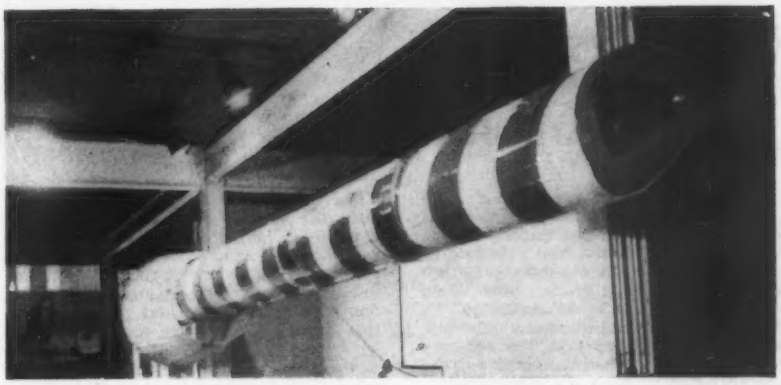
The following dates of forthcoming meetings have been announced: The Institution of Mining Engineers (A.G.M.), January 29, 1959; Manchester Geological and Mining Society (A.G.M.), October 16, 1958; the Midland Counties Institution of Engineers (A.G.M.), October 1, 1958; the Midland Institute of Mining Engineers (A.G.M.), October 2, 1958; the Mining Institute of Scotland, September 17, 1958; the North of England Institute of Mining and Mechanical Engineers, October 11, 1958; the Southern Counties Institute of Mining Engineers (A.G.M.), October 10, 1958; the South Wales Institute of Engineers (A.G.M.), October 16, 1958.

★

The Institution of Mining Engineers is arranging a three-day Symposium on Shaft Sinking and Tunnelling, to be held at Olympia, London, on July 15, 16 and 17, 1959, during the period of an Exhibition of Mining Machinery, also at Olympia, sponsored by the Council of Underground Machinery Manufacturers.

★

A report entitled *Examination of the Hannum Lead Prospect, Fairhaven District, Seward Peninsula, Alaska*, has been placed on open file and may be examined by the general public at the Department of the Interior library in Washington, the Bureau of Mines regional headquarters at Albany, Oregon, and its Alaska Mining Experiment Station, Juneau.



Geophysical equipment is being shown at the 1958 Brussels Fair by Aeromagnetic Surveys Ltd. of Canada. A feature of the display is the helicopter-borne electro-magnetometer developed by the company which has been in use in Canada and the U.S. since 1956. This device features a transmitting coil which can be used either in the vertical or horizontal position. The coils are contained inside a 20-ft. bird which is shown here at the display. The bird in operation is towed 100 ft. below the helicopter and 100 ft. above the ground surface

The Tilt Cove Copper Mine covers an area of four sq. miles on the north coast of Newfoundland, and can be reached by sea only in the summer months. Our picture shows a Hunslet P4 diesel locomotive, four of which are in use at the mine, for handling spoil taken from the development workings and for bringing in materials. They are 5½-ton diesel mechanical locomotives and are owned by the Maritime Mining Corporation Ltd. When development work is finished the locomotives will be responsible for hauling the major part of the mine's production

Metals and Minerals

Are Better Times Ahead For Manganese ?

Although little actual business has been reported in the manganese market, there appears to be a better feeling in the trade, and sellers are tending to firm up in their asking prices. News from America continues to be dominated by reports of growing business strength, which give the impression that not only has the downturn been arrested but the recovery may even have started, however gradual it may prove to be. Steel production for the current week in terms of 1958 capacity is estimated at 59.7 per cent, compared with last week's 57.8 per cent. Since the world manganese market is closely geared to the requirements of the American steel trade, this upturn is certainly encouraging, though many ingots must yet pass through the rolling mills before—to mix the metaphor—the manganese trade is out of the wood.

In the absence of any concrete indications on the barter of U.S. products against manganese ore, the American market remained inactive throughout July. Even the gains in steel production failed to set off an improvement, for the reason that most consumers already have heavy supplies. It was reported that an official of the Commodity Credit Corporation was on his way to India to finalize some of the details of the barter deal with that country. The total value of the deal would be about $45,000,000, including freight for the U.S. grains and for the manganese ore. It is thought that some 150,000 tons of 42 per cent ore will be taken by the U.S. and about 100,000 tons of 46 per cent ore and ferromanganese.

★

According to trade sources in Bombay, the Indian Government may sponsor legislation during the parliamentary session beginning on Monday to provide for the levy of a cess on manganese exports. It is understood that the proceeds of the levy would be used to finance welfare for the workers employed in the industry, but details of the proposed scheme are still unknown.

★

A new manganese company is to be formed in Ghana. Its name has not been disclosed, but is expected to be the Ghana Manganese Co. It is anticipated that the government will be a participant.

WHITHER QUICKSILVER ?

The London ex-warehouse price of quicksilver has stood at £79 for nearly two weeks. Three rises, each of £1, during July lifted it to its present level. The next few weeks should decide whether the price will appreciate further or turn easier, the immediate position being not too clearly defined. Demand generally is seasonally quiet, while metal c.i.f. U.K. has been available at between £77 and £78, or even less. Moreover, with the U.K. market price rather more advantageous than the spot New York price less import duty of about $20, Mexico might feel disposed to sell eastwards. But against this can be put the fact that both the Spanish and Italian producers continue to adhere to their £80 per flask f.o.b. price. Moreover, if arrivals of metal other than of Spanish and Italian origin remain in few and strong hands, then the maintenance and possible further firming of the price cannot entirely be overlooked. Particularly encouraging is the rise in price in the U.S., where quicksilver is now quoted at $233-$237 per flask, f.o.b. New York, against $230-$235 previously.

FIRMER WOLFRAM MARKET

The wolfram shipment price at 62s. 6d. to 67s. 6d. per l.ton unit c.i.f. Europe has been in force for nearly two weeks. Although business slackened in front of the Bank Holiday, the tone of the market currently looks less insecure. In this connection, dealers point out that a considerable tonnage has been removed from the market during the past two or three weeks, the amount suggested ranging from 200 to 300 tons or even more. Moreover, sellers are reported to be adopting a much stiffer attitude and are unwilling to sell below certain limits. In fact, some producers are believed to have withdrawn from the market altogether until the price has risen substantially over 100s. It must not be forgotten, however, that unsold stocks in Europe are still sizeable. Until they have been reduced to more manageable proportions and industrial demand definitely improves, there is always the risk that prices may slip again.

ALUMINIUM PRICE INCREASES

Alcoa has increased the price of basic aluminium pig by seven-tenths of 1 c. per lb., effective August 1, bringing the new price to 24.7 c. per lb. Its example has been followed by other leading U.S. aluminium companies. Alcoa stated that the increase in basic aluminium pig would be accompanied in general by equivalent advances in the prices of alloy grades of pig, ingot, and aluminium mill products.

Aluminium Ltd., the leading Canadian producer, also announced that it was following the increase, but only in so far as the U.S. market was concerned. Aluminium Ltd. said that no price changes were being made at the present time in other markets.

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Herr Dirksen, a director of Vereinigte Aluminiumwerke, stated recently that the German aluminium industry would not be able to stand up to foreign competition unless duties were levied on all aluminium imports. At present only those aluminium imports in excess of the duty-free quota of 43,000 tonnes a year pay a 7 per cent import duty. German aluminium now costs DM.2.23 per kilo, against DM.2.08 paid for Canadian aluminium and DM.1.85 to DM.1.90 for imports from Eastern Europe. Whereas German aluminium consumption is expected to total 285,000 tonnes this year against 274,000 tonnes in 1957, imports are expected to rise from 39,000 tonnes last year to 60,000 or even 65,000 tonnes in 1958.

The Swiss concern Aluminium Industrie AG of Chippis has informed the Swiss authorities that it intends to cut output of its aluminium plant at Badisch-Rheinfeld, West Germany, by 30 per cent from next September. This will mean a loss of output of about 7,000 tonnes annually.

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The first shipment of 35,000 tonnes of bauxite from Semantan, in West Sarawak, has been made to smelters in Japan and Formosa.

METALLIC BERYLLIUM

The first privately-owned plant in the U.S. for the fabrication of metallic beryllium has been placed into operation at Hazelton, Pennsylvania, by the Beryllium Corporation. The bulk of the new plant's output will go for nuclear uses, but experimental shapes for aircraft research and development will also be produced.

A record order for fabricated beryllium has been placed with the Brush Beryllium Co. of Ohio by the Belgian Nuclear Planning Centre. Worth $1,200,000, it is for two beryllium core matrices for the high-flux material testing reactor B.R.2 under construction at Bol. This reactor, scheduled to be ready early in 1960, is shown in the Euratom Commission's report as the second of 25 existing and projected research reactors to use beryllium as a moderator. The first is the French plutonium-burning reactor Proserpine at Saclay, moderated with graphite and beryllium oxide, which went critical earlier this year.

COLUMBIUM AND TANTALUM

In its review of columbium and tantalum in 1957, the Bureau of Mines, U.S. Department of the Interior, states that the decline in world production of concentrates continued for the second consecutive year. In 1956 it fell to 4,575 s.tons from 5,745 tons in the previous year. Last year it decreased by a further 15 per cent to 3,880 s.tons, due to the absence of the U.S. Government from the foreign concentrate market. On the other hand, domestic U.S. production rose to a record high level for the second consecutive year, a further gain of 71 per cent to 185 s.tons being recorded for mine shipments in 1957.

U.S. domestic industrial consumption, as measured by the metal content of mineral concentrates and metal-bearing tin slags, is estimated to have increased by about 10 per cent during the year. However, the business recession late in the year resulted in curtailed consumption of ferro-columbium and ferro-tantalum-columbium by the steel industry. Defence and atomic energy requirements for columbium and tanta-

lum metal also were less than anticipated. This combination of facts resulted in generally higher year-end stocks of primary products. However, U.S. producers are optimistic about the future demand for both metals. New facilities, together with moderated demand, made all columbium and tantalum products readily available by the end of 1957.

*

Canada's asbestos shipments in the first quarter of this year were 20 per cent lower than in the corresponding three months of 1957.

COPPER · TIN · LEAD · ZINC

(From Our London Metal Exchange Correspondent)

Apart from some reaction in copper values on Tuesday afternoon when business was resumed after the week-end holiday, markets have maintained a very steady appearance. A satisfactory volume of business has gone through the Exchange considering that the main holiday period is upon us and many works are closed for the next two weeks.

KENNECOTT'S SURPRISING MOVE

At the end of last week copper closed on a firm note with the Belgian quotation advancing B.Frs. ½ per kilo to B.Frs. 29 and U.S. customs smelters boosting their price ½ c. to 27 c. However, Kennecott sprang a surprise on the market on Monday by announcing their intention to increase forthwith the working week from four days to five days at their four mines in the U.S. — Arizona, Nevada, New Mexico, and Utah. This is calculated as equivalent to an increase of about 25 per cent on the production rate and estimates put this as an additional just over 5,000 tons per month, bringing the annual rate up to 324,430 tons.

This action was regarded as surprising by most observers, coming as it does just when the U.S. Government's proposal for the stockpiling for one year of up to 150,000 tons of domestic copper at up to 27½ c. per lb. is about to undergo its severest test in the House of Representatives. In this connection it is reported that the Interior Secretary considers the chances of the necessary legislation going through this session as good, whilst other comments from Washington are not so confident and incline to the opposite view. Certainly the better tone in copper stems from the hope that Congress will push through the Mineral Stabilization Bill this session and from another fresh factor, namely the announcement that the 15 Western Nations comprising the Cocom Group had agreed to permit the sale to Eastern Europe of refined copper in forms other than only wire or other fabricated shapes, as previously was the case.

It remains to be seen whether, in fact, Russia will increase its buying of copper as a result of this or whether it will only mean an alteration in the type of copper purchased. In any event, it would appear that so far Russia has made no approach to the Chileans in the matter, but it could not be considered before 1959, as this year's production is fully sold. Demand from the Continent for electro continues satisfactory with the stringency in supplies reflected in the premium of £13/£14 believed paid for metal for forward shipment.

U.S. produced copper has been moving in somewhat better volume with brass and wire mills reporting some improvement in their sales. Customs smelters, however, found interest quiet at the higher price of 27 c. and have reverted to 26½ c., but sales made at the lower levels mainly for export have placed them in a satisfactory position. U.S. scrap copper was quoted higher at 21½ c. for No. 2 but offerings were not plentiful. Stocks in U.K. official warehouses dropped sharply last week by 1,075 tons and now stand at 12,457 tons.

RUSSIA AND THE I.T.A.

The tin market reacted favourably to the report that Russia had replied to the invitation to join the International Tin Agreement by suggesting she should do so in the role of observer. Certainly this is a more favourable attitude than an outright refusal to have anything to do with it, but at the same time it is difficult to see what purpose would be served as any country not a participant is an observer. However, the whole matter is under negotiation and it is possible that a statement will be issued in due course.

Shipments of tin from Singapore in July totalled 477½ tons compared with 716½ tons in June and 735½ tons in July a year ago. Comparative figures for Penang were 3,058½ tons, 2,355½ tons, and 4,506½ tons. Stocks in U.K. official warehouses again showed a reduction of 246 tons last week and now total 17,745 tons.

On Thursday morning the Eastern price was equivalent to £754¾ per ton c.i.f. Europe.

LEAD - ZINC FEATURELESS

Lead and zinc have been featureless markets and in both cases the future of the Mineral Stabilization Bill is of major interest. Fair business was reported during the week, particularly in prime western zinc, whilst demand for special high-grade quality continued quiet.

Total pig lead production figures in O.E.E.C. producer countries for June totalled 48,157 tonnes against 50,487 tonnes in May. The former figure represents an increase of about 5 per cent over the figure for June, 1957.

Closing prices are as follows:

	July 31		Aug. 7	
	Buyers	*Sellers*	*Buyers*	*Sellers*
COPPER				
Cash	£207½	£207¾	£203¾	£203½
Three months	£207¼	£207½	£203¼	£204
Settlement	£207½		£203½	
Week's turnover	9,500 tons		7,450 tons	
LEAD				
Current ½ month	£71½	£72	£72¼	£72½
Three months	£72¼	£73	£73	£73¼
Week's turnover	4,475 tons		3,325 tons	
TIN				
Cash	£730	£730½	£730½	£731
Three months	£733	£733½	£734	£734½
Settlement	£730½		£731	
Week's turnover	600 tons		470 tons	
ZINC				
Current ½ month	£64½	£65	£64½	£64½
Three months	£65½	£65½	£65	£65½
Week's turnover	4,900 tons		3,050 tons	

LONDON METAL AND ORE PRICES, AUG. 7, 1958

METAL PRICES

Aluminium, 99.5%, £180 per ton
Antimony—
English (99%) delivered, 10 cwt. and over £190 per ton
Crude (70%) £190 per ton
Ore (60%) bases 19s. 6d./20s. 6d. nom. per unit, c.i.f.
Arsenic, £400 per ton
Bismuth (min. 1 ton lots) 16s. lb. nom.
Cadmium 10s. 0d. lb.
Cerium (99% net), £16 0s. lb. delivered U.K.
Chromium, Cr. 99% 6s. 11d. lb.
Cobalt, 16s. lb.
Germanium, 99.99%, Ge. kilo lots 2s. 8d. per gram
Gold, 250s. 2¼d.
Iridium, £22 oz. nom.
Lanthanum (98/99%) 15s. per gram.
Manganese Metal (96% - 98%) £290
Magnesium, 2s. 5¼d. lb.
Nickel, 99.5% (home trade) £600 per ton
Osmium, £18 oz. nom.
Osmiridium, nom
Palladium, £6 5s.
Platinum U.K. and Empire Refined £23 5s. oz.
Imported £20 0s./£21 0s.
Quicksilver, £79 0s. ex-warehouse
Rhodium, £40/£42 oz.
Ruthenium, £14/£16 oz. nom.
Selenium, 50s. 0d. per lb.
Silver, 75d. f. oz. spot and 74¾d. f'd.
Tellurium, 14s./15s. lb.

ORES AND OXIDES

Bismuth .. .. 30% 5s. 0d. lb. c.i.f.
20% 3s. 3d. lb. c.i.f.
Chrome Ore—
Rhodesian Metallurgical (semifriable) 48% (Ratio 3:1) .. .. £15 15s. 0d. per ton c.i.f.
" Hard Lumpy 45% .. .. (Ratio 3:1) .. .. £15 10s. 0d. per ton c.i.f.
" Refractory 40% .. .. £11 0s. 0d. per ton c.i.f.
" Smalls 44% .. .. .. (Ratio 3:1) .. .. £14 0s. 0d. per ton c.i.f.
Baluchistan 48% .. .. .. (Ratio 3:1) .. .. £11 15s. 0d. per ton f.o.b.
Columbite, 65% combined oxides, high grade .. .. nom.
Fluorspar—
Acid Grade, Flotated Material .. .. £22 13s. 3d. per ton ex. works
Metallurgical (75/80% CaF_2) .. .. 156s. 0d. ex works
Lithium Ore—
Petalite min. 3½% Li_2O .. .. 47s. 6d./52s. 6d. per unit f.o.b. Beira
Lepidolite min. 3½% Li_2O .. .. 47s. 6d./52s. 6d. per unit f.o.b. Beira
Amblygonite basis 7% Li_2O .. .. £26 5s. per ton f.o.b. Beira
Magnesite, ground calcined .. .. £28 0s./£30 0s. d/d
Magnesite Raw (ground) .. .. £21 0s./£22 0s. d/d
Manganese Ore Indian—
Europe (46% - 48%) basis 67s. 6d. freight .. .. nom.
Manganese Ore (43% - 45%) .. .. nom.
Manganese Ore (38% - 40%) .. .. nom.
Molybdenite (85% basis) .. .. 8s. 5d. per lb. (f.o.b.
Titanium Ore—
Rutile 95/97% TiO_2 (prompt delivery) .. .. £35/£36 per ton c.i.f. Aust'n.
Ilmenite 52/54% TiO_2 .. .. £11 10s. per ton c.i.f. Malayan
Wolfram and Scheelite (65%) .. .. 62s. 6d./67s. 6d. per unit c.i.f.
Vanadium—
Fused oxide 95% V_2O_5 .. .. 8s. 11d. per lb. V_2O_5 c.i.f.
Zircon Sand Australian) (65 - 66% ZrO_2) .. .. £14 5s. per ton c.i.f.

Mining Finance

Nchanga in the Long-term

The story of the year's operations at Nchanga, the Rhodesian copper producer administered by Anglo American, is epitomized in the company's balance sheet as at March 31, 1957. At the end of the preceding financial year, net current assets amounted to some £3,500,000, while cash assets included almost £12,700,000 on deposit with the parent organization. A year later, after twelve months of declining metal prices, the sum on deposit had been reduced to £4,542,819, while net current assets were only £1,634,000, this in spite of substantial reductions in the taxation and dividend elements of the liabilities side.

The financial results for the year have already been the subject of comment in these columns (July 18, 1958). With regard to the future, Mr. H. Oppenheimer, the chairman, is distinctly optimistic. The present position, he says, is that as a result of the production cuts made by the world's major producers, supply and demand are in equilibrium.

At any rate for the time being, the metal seems to be trying to go better, although whether this tendency has any real significance or not remains to be seen. Nevertheless, the longer that copper can keep its head above the £200 mark—last year's average was £198—the better Nchanga's chance of avoiding a further cut in the dividend rate, and in view of the fact that this year's dividend was, in a sense, short-earned (pointing to the board's policy of keeping dividends as stable as possible), it would be wrong to view the future too pessimistically.

On a long-term view, of course, pessimism is entirely out of place. Once economic expansion begins to regain momentum, as indeed it must sooner or later, the demand for copper will strengthen, and it is a characteristic of this metal that changes in the level of demand, whether up or down, are invariably rapid. In this context Nchanga is extremely well placed. The £7,000,000 capital programme is now virtually complete, and the mine now has both the capacity and the reserves to increase production substantially as soon as demand warrants. Next year, in fact, production is estimated to reach 150,000 tons, 300,000 tons more than this year's record output, as a result of the redistribution of 90 per cent of Bancroft's planned production between Nchanga and Rhokana.

Mr. Oppenheimer's statement is on page 157.

CONSOLIDATED TIN SMELTERS MAINTAINS PAYMENT

A not infrequent criticism of the International Tin Agreement is that the figure of £730, to which the floor price was raised after it had originally been fixed at £640, is too high in relation to the present state of world trade and to the current depressed price levels of other commodities.

That this argument is transparently false is shown by Mr. Clifford Waite in his advance statement to stockholders of Consolidated Tin Smelters. By computing the average prices of the L.M.E. metals for the years 1929-38 and comparing these with the prices ruling on March 31 last, Mr. Waite points out that copper had risen by 317.4 per cent, lead by 363 per cent, and zinc by 295 per cent. If a buyer were to buy one ton of each metal, the average rise would have been of the order of 312 per cent. Tin, on the other hand, shows a rise of only 287 per cent at the buffer stock floor price, and of 314 per cent at £781 per ton, the manager's current minimum selling price.

On the near-future outlook for tin, Mr. Waite estimates that world consumption in 1958 will exceed production by some 14,000 tons, after allowing for an estimated 16,000 tons of metal from China and the U.S.S.R. It is interesting to note that this estimated deficit is considerably lower than the figure of 20,000 tons suggested by A. Strauss and Co. in their latest review. So far this year this shortfall has been masked by the substantial quantity of metal, particularly from Bolivia and the Belgian Congo, *en route* from producer to consumer. This "pipeline" can be anything up to six months long, and in this fact — together with the effects, psychological and otherwise, of the Russian offerings — lies the explanation for the metal's apparent inability to rise above the floor price, in spite of the rigidity of quota restrictions.

In the context of Consolidated Tin's own finances, this means that the not unsatisfactory results for the year to March 31 last (consolidated net profit £531,219 against £577,632) are unlikely to be repeated for some time to come, and certainly not in the current year. Indeed, Mr. Waite warns that although any estimate of the fall in the company's revenue would be misleading, it may not be possible to maintain this year's unchanged dividend and bonus of 3s. 6d.

Extracts from Mr. Waite's statement are on page 158.

GEITA GRINDS EXCEEDING SMALL

Last May it was announced that the Geita gold mining company was placing its property in Tanganyika on a care and maintenance basis "pending a decision as to its future". This seemed a disappointing end to a long period of struggle that had from time to time looked as though this borderline mine would be able to reach a permanent profit basis, slender though it might be in the absence of any rise in the gold price or some material reversal of the inflationary pressure on general mining costs. It is thus all the more welcome that in the June quarterly report the controlling company, Kentan Gold Areas, a member of the Tanganyika Concessions group, is able to announce that the mine has had a reprieve.

The metallurgical troubles previously thought to be associated with refractory ores, have now been traced to the plant, and with the adoption of a finer grind and other measures the difficulties have been overcome. Consequently, it is planned to continue operations for a further two years, although on the reduced scale of 18,000 tons a month. Gold recovery on the other hand, has already improved in the June quarter to 3.195 dwt. a ton from 2.761 dwt. in the March quarter.

Consolidated Gold Fields have resigned as technical managers of Geita. At the same time they have signified along with Kentan that the loans to Geita of £237,500 from each concern will not be called in and interest thereon will be waived. The remaining problem of finance has been solved by Tanganyika Holdings agreeing to advance £30,000 to Geita, and Tanganyika Concessions a maximum of £117,253. There is no market in Geita shares, the capital of which is owned as to 78 per cent by Kentan and 22 per cent by Gold Fields.

RAND AND O.F.S. RETURNS FOR JULY

A rise from 249s. in June to 250s. in the price received for gold last month is sufficient explanation for the crop of record profits announced by the South African gold producers for July.

In particular, five of the six young O.F.S. mines administered by the Anglo American Corporation attained new highs. Notable among these was the return from President Brand, whose overall earnings, gold and uranium, reached £628,037, more than £37,000 above the June total.

Another exceptionally good O.F.S. result was that of St. Helena, the Union Corporation mine. The first gold producer to operate in the O.F.S. field — milling began in 1951 — St. Helena continues to go from strength to strength, and last month's record profit of over £197,200 augers well for next month's dividend declaration. It should not be forgotten, however, that the revised estimate for capital expenditure put forward by the chairman two months ago probably puts a top limit of 1s. 3d. on expectations.

The picture on the Far West Rand and in the Klerksdorp area was once again marred by lower earnings at Hartebeestfontein (Anglo - Transvaal). The decline in the fortunes of this company, temporary though it must be, is extremely hard to explain. Throughput and grade were identical during June and July, unit costs were lower by 6d. per ton, and, as previously noted, the gold price was up by 1s. Overall, therefore, Harties' profits could have been some £3,500 higher last month, taking into account the reduction of £1,000 in uranium profits. Yet the profits announced are some £14,500 lower.

All the other producers in these two areas went ahead sharply. Both Doornfontein and West Driefontein, West Wits mines of the Gold Fields group, reduced costs and marginal reductions in grade were insufficient to prevent record profits being earned.

Further Inco Cuts.—Inco's net earnings for the first half of 1958 were equivalent to $1.46 per share against $3.12 in the first six months of 1957. Of the $1.46, 63 c. were earned in the June quarter. Announcing this, Inco says that nickel deliveries in the first six months of 1958 were 35 per cent below the figures for the same period of 1957. A further cutback in the annual production rate to 200,000,000 lb. each of nickel and copper was made as from July.

MARKET HIGHLIGHTS

The advance in copper share prices provided the outstanding feature of mining markets on the London Stock Exchange during the past week. Basically, there was a more confident feeling about the U.S. economic outlook: this was engendered partly by the strength of Wall Street and partly by the slight overall upturn in business activity seen there in recent weeks. At the same time, Mr. Harry Oppenheimer's optimism about the outlook for copper, expressed in Johannesburg at the week-end, made a marked impression. As a result, the share market advanced on a broad front, but rises in share prices were out of proportion to the actual amount of business passing. There were those who wondered whether this ever forward-looking market was not discounting things rather too far ahead.

The star turn of the movement was provided by Bancroft, which under the urge of strong Cape buying jumped smartly ahead to their best this year of 20s. 7½d., Nchanga advancing by 8s. 9d. to £11, being additionally helped by the annual report and its news that the Nchanga West orebody and open pits on Nchanga and Chingola orebodies were all now able to send ore to the plant. Among other good price rises, "Rhoanglo" gained 4s. 3d. to 75s. 7½d., R.S.T. 1s. 6d. to 16s. 9d., and Messina 5s. to 93s. 9d.

Meanwhile, tin shares remained in the doldrums and little enthusiasm was aroused by the news that Russia was likely to join the Tin Agreement as an "observer" member only. Lead-zincs, however, after looking rather uncertain, later became affected by some of the optimism surrounding copper shares. Consolidated Zinc moved up 2s. to 49s. 3d. and North Broken Hill put on 5s. to 75s. Elsewhere, St. John d'el Rey (55s.) benefited to the extent of 5s. over the period as a result of spasmodic U.S. inquiry.

While most of the investment interest centred on base metals, gold shares not surprisingly remained very much out of the picture. The market was considered to be basically firm, but trading remained small. Even the appearance of another excellent batch of monthly profit returns had virtually no effect. President Brand improved to nearly 56s. at one time, but Buffelsfontein (39s. 3d.) were unmoved by their record monthly earnings.

Occasional speculative inquiry from Johannesburg was reported in Riebeeck and Saaiplaas, but the buying had little tangible effect on the respective share prices. Finance issues remained steady, Rand Mines rising to 81s. 3d. at one time following the Central Mining meeting and its mention of Rand Mines' tax advantages.

Outside South African gold shares, the Ghana producer, Ashanti Goldfields, provided a bright spot with a rise to 15s. 9d. ex dividend. The improvement followed Ashanti's July return and its disclosure of another exceptionally high reef development value of 79.6 dwt. gold over 11.8 ft. Also encouraging was the mine's monthly profit figure, which rose to an estimated £132,869 (before tax) from June's £114,247.

NCHANGA CONSOLIDATED COPPER MINES LIMITED

(Incorporated in Northern Rhodesia)

MR. H. F. OPPENHEIMER REVIEWS PRODUCTION POLICY

The following are extracts from the statement by the Chairman, **Mr. H. F. Oppenheimer**, which has been circulated with the annual report and accounts for the year ended March 31, 1958.

My father, who was appointed the first Chairman of the Company when it was formed in 1937, died in November of last year. He was associated with the property from 1926, the early days of the Northern Rhodesia Copperbelt, and under his leadership the Nchanga Mine overcame the greatest difficulties and became what it is today—one of the great copper producers of the world.

During the financial year ended March 31, 1958, we produced 121,200 long tons of copper—a record for the Company. The average price for electrolytic copper on the London Metal Exchange during the year was £198 per long ton and the profit for the year, after providing for depreciation and tax, amounted to £4,370,380 compared with £9,528,798 for the previous financial year.

Capital expenditure, principally on the opening up of the Chingola Orebody and the expansion of plant to treat the increased tonnage of ore made available from the open-cast pit on the Nchanga Orebody, amounted to £3,000,000 but, as it has been our policy during the past years of exceptional prosperity to appropriate more than was required to meet expenditure at the time, it has only been necessary to appropriate £1 million from profits for capital expenditure this year.

Copper Price

Your directors have recommended a final dividend of 7s. net per unit of stock which, with the interim dividend, will make a total distribution for the year of 10s. per unit of stock. The appropriations for dividend and capital expenditure involve a small reduction in the amount carried forward.

We feel this dividend is justified in view of the fact that copper prices during the year were at a low level which we do not think will persist in the long run. It is the policy of the board as far as possible to spread capital charges in such a way as to keep the dividend fluctuations, which cannot be avoided by any copper producer, to a minimum.

During recent months, the copper price has shown an increase from the low point of £160 per long ton reached in February of this year. The present position, as a result of the cuts in production made in various parts of the world, appears to be one of balance between supply and demand. What the immediate future trend will be is difficult to determine since it is dependent on so many factors, such as the course of the current recession, actions of governments and the attitude of producers themselves.

Our confidence in the long-term future of copper remains unshaken, however, and I look forward to the time when the present cuts in production, to which I will refer, will be restored and the copper mining industry will resume its expansion to meet the increased consumption required by a new period of industrial growth throughout the world.

Group Output Policy

During the year many of the major producers cut their production in varying degrees in an attempt to correct a condition of oversupply of copper which had developed with such serious effects on the price of the metal. We decided that we would fall into line and join with the other copper producers administered by the Anglo American Corporation in effecting a reduction of about 10 per cent in the aggregate planned output of the three companies.

In discussion with Bancroft Mines Limited, a new mine and on that account a high cost producer, it was decided that, rather than apply a 10 per cent cut in production by each of the three producers, Bancroft should from April 1 of this year cease producing for a year, and your company and Rhokana Corporation Limited should increase their output slightly, so that the overall production for the year would be about 10 per cent less than had been planned by the three companies together.

Rhokana Corporation and your company agreed as part of this arrangement to pay Bancroft a sum calculated to be sufficient to cover the cost of the interest on loan capital and of the underground development on that property for the year of shut-down. I am sure this arrangement is in the interests of the three companies concerned and of the copper-producing industry as a whole.

The indications are that the voluntary and unconcerted cuts by producers in many parts of the world have been successful in correcting the imbalance between supply and demand.

Your company was able to enter into this arrangement involving, as it did, an immediate increase in the planned production, because the property has now been developed to a stage where great flexibility both in regard to plant capacity and mining operations has been achieved. The fourth stage extensions to the plant are virtually completed and the underground mine on the Nchanga West Orebody and the open pits on the Nchanga and Chingola Orebodies are all now able to send ore to the plant.

In the present circumstances of the copper market, calling possibly for further swift changes in the scale of production, this is a very satisfactory state of affairs.

Increased efficiencies and the reduction of costs at the mine have assumed greater significance in consequence of the lower copper price levels and every aspect of the use of labour and of machines is being continuously and thoroughly reviewed.

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CENTRAL MINING & INVESTMENT CORPORATION

LORD BAILLIEU'S STATEMENT

The annual general meeting of The Central Mining and Investment Corporation Limited was held on July 31 in London.

The Chairman, **The Rt. Hon. Lord Baillieu, K.B.E., C.M.G.,** presided and, in the course of his speech, said :

The Accounts under review record the first full year of trading by our organization in its new form. The Central Mining and Investment Corporation remains as a holding company with but a single investment, namely, the whole capital of Central Mining Finance Limited ; that company is now the Finance House, operating in London and Johannesburg, with substantial investments in mining and industry and controlling a group of wholly-owned subsidiaries including an investment trust. Rand Mines Limited, chief of our associated companies in South Africa, now administers, under their respective Boards, the various associated mining and industrial enterprises that form the C.M./R.M. Group.

Consolidated profit before taxation at £2,165,000 for the year owes its considerable expansion on the figure for the preceding 15 months mainly to a substantial increase in profits from share realisations. 1957/58 was not a good trading year for stock markets generally and our trading was in line with the general market experience save for what might be termed a technical realisation, that is, the liquidation of Central Mining Free State Areas.

As stated in the Notes on the Accounts the method of presenting the charge for taxation has been slightly changed. Some £823,000 is debited in the first part of the Profit and Loss Account while a further £200,000 representing Profits Tax distribution charge (to be borne by the senior company) is debited in the second part of that Account. Since the provision for diminution in share prices is not taken into account in determining our tax liability it has been thought wise to arrange henceforward to debit that provision to Investment Reserve, instead of through the Profit and Loss Account.

In May 1957 I stated our view of the position arising from the sale of our interest in The Trinidad Oil Co. Ltd. and mentioned the dispositions we had made in consequence. The Inland Revenue are still considering our computations in respect of the period ended March 31, 1957. Meanwhile, we are glad to be able to recommend a dividend which, with the interim already paid, amounts to 4s. per share for the year —a slight improvement on the rate for the preceding 15 months.

Members will, I feel sure, agree with the Board's wish to create an Investment Reserve for Central Mining Finance Ltd. as quickly as profits will allow. For that reason we have recommended that the dividends for the year should be paid out of accumulated profits of the Corporation, thus enabling the Finance Company to retain the whole of its net profit and use £1 million of it to create an Investment Reserve. The need for such a Reserve is given point by the fact that the amount required to provide for diminution in the value of share investments is about £350,000 with a further £50,000 for interests in investigations of various kinds to be written off. The whole £350,000 is not, of course, expected to become a realised loss, but is in general a reflection of the downward trend of share prices during the financial year. An improvement has occurred since March 31 but a Group such as ours must expect and be prepared for considerable swings in share market prices.

One result of the appropriations I have mentioned is to reduce the balance of unappropriated profits from £790,000 to £417,000. No particular significance should be attached to this reduction. The important thing is that the Revenue Reserves as a whole have been strengthened by £226,282 from the year's activities.

Referring now to the Balance Sheet, the figure of £2,186,000 in respect of Contingent Liabilities may appear high. However, it contains nothing abnormal ; about one-half being loan commitments to mining companies part of which has been laid-off with other finance houses and the bulk of the remaining half being underwriting commitments entered into in the ordinary course of business and since discharged.

Investment Policy

Progress has been made in developing the policy outlined in my address to you last August. The investments of Wall Trust Limited, mainly industrial and located in the U.K. and N. America, have more than doubled during the year. The Trust's investments now amount to about £1 million in value.

The activities of our Group are such that we are not able to take any direct benefit from the 1957 Finance Act relating to Overseas Trade Corporations. Nevertheless we have created Centramic (South Africa) Ltd. as a medium for holding and, it may be, dealing with some of our investments in South Africa. So long as its profits are retained in the Union they will not be subject to taxation in the U.K. Members will doubtless appreciate, however, that if dividends are not to suffer there is a limit at which it becomes impracticable for a holding company voluntarily to deny itself the earned income of one or more of its subsidiaries. Both Centramic (S.A.) Ltd. and Centramic Ltd., in Canada, are operating profitably and for the time being retain their profits in order to take advantage of opportunities for further investment of their resources.

I would like at this time to bring you up to date with the investment position and for this I shall take as a starting point the position at May 30, 1957, when we held our Extraordinary General Meeting. As at that date we had invested, since the cash payment by the Texas Company for our Trinidad oil shares, £1½ million in Canadian oil and £800,000 in South African, North American and United Kingdom industrial and mining companies ; I told you then, too, that the programme on which the Board had been acting envisaged the investment of a further £300,000 to £400,000 in industrial securities and a further £1 million or more in Group mines in the immediate future. In fact subsequent investments by way of shares in, or loans to, South African companies have amounted to a total of some £1¾ million; to some £250,000 in Rhodesian companies, approximately £200,000 in North American companies and approximately £400,000 in United Kingdom companies ; this is of course merely a continuation of the investment policy which I enunciated at our annual general meeting last August. We are continually sifting propositions for investment in many parts of the world and continue to participate in exploratory ventures in Southern Africa under the leadership of Rand Mines.

The report was adopted.

CONSOLIDATED TIN SMELTERS

SATISFACTORY PROFITS

The twenty-ninth annual general meeting of Consolidated Tin Smelters, Ltd., will be held on August 26 in London.

The following is an extract from the statement by the chairman and joint managing director, **Mr. Clifford Waite,** circulated to stockholders with the report and accounts :—

Taking all circumstances into account, I think the results for the year ended March 31, 1958, can be regarded with some degree of satisfaction. The trading profits of the Group at £1,191,965 show only a slight reduction below the previous year's figure of £1,224,699. These results reflect the earning of satisfactory profits by all sections of the Group both in the United Kingdom and overseas.

The consolidated net profit after tax is £531,219, but credits not wholly attributable to the year's operations are lower this year, and the final net surplus is £533,476 against £640,706 in 1957.

Tin Price

The average price of tin during the year ended March 31, 1958, was some £30 lower than in the preceding year. In London the average price was £741 15s. 6d. and in Singapore Malayan $368.5 per picul, equivalent to £727 10s. 6d. per ton. During the first three months of the year the price of cash tin in London remained steady at £770/760 per ton. Thereafter a gradual decline took place until on October 9 cash tin touched £730 per ton—the floor price under the International Tin Agreement—where it has stayed for the last six months. The price of three months' tin fell below the floor price in October, but recovered in March to about £735 per ton. This pattern has remained unchanged during the last three months.

Production and Consumption

(excluding U.S.S.R. and China)

The fall in the world production of tin in concentrates which started in 1956 continued in 1957, when the total was 164,000 tons as compared with 167,000 tons in 1956 and 169,000 tons in 1955. The production of Bolivia and Thailand increased by 1,000 tons in each case, but Malayan production fell by 3,000 tons and Indonesian by 2,000 tons.

Due to the recession in the U.S.A., which started in the second half of 1957, world consumption reversed the upward trend of the last five years and fell by 5,000 tons to 152,000 tons. Consumption in the U.S.A. declined by 6,000 tons and in the U.K. by 500 tons, but there were slight increases in some European countries.

In view of the regulation of tin exports it will be clear that the tonnage of tin concentrates received by our smelting works in England and Malaya during the current financial year will be substantially reduced. We all hope that this reduction will be of a temporary nature, but while it lasts the Group's profits are bound to be severely curtailed. Conditions in the tin industry can change so rapidly that it would be misleading to attempt to estimate the extent of the fall in our revenue, but it would seem that it may not be possible for us to maintain the same rate of dividend on the ordinary stock next year.

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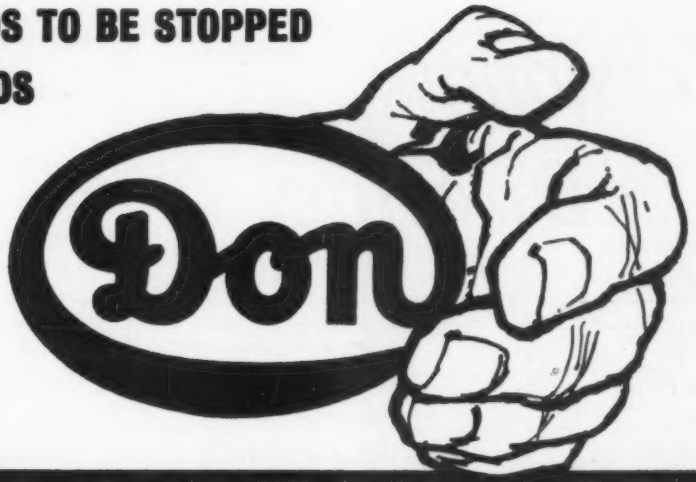

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